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THESIS

CAPITAL INVESTMENT MOTIVATIONAL TECHNIQUES
USED BY
PRIME CONTRACTORS ON SUBCONTRACTORS

by

Keith S. Holtsclaw

December 1984

Thesis Advisor: David W. Lamm

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The research, through the use of a subcontractor survey, determined that little if any effort was expended at the prime contractor level to motivate subcontractors to invest in productivity enhancing capital equipment. Until recently, subcontractors have been excluded from DOD efforts to incentivize capital investment.

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Capital Investment Motivational Techniques used by Prime Contractors on Subcontractors

by

Keith S. Holtsclaw
Lieutenant, United States Navy
B.S., University of Maryland, 1975

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

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December 1984

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ABSTRACT

The current Acquisition Improvement Program (AIP) has focused a great deal of attention on many of the perceived management problems in the federal acquisition process. Included among these are the motivation of contractors to make productivity enhancing capital investments. Although this problem has been addressed previously by profit policy, the effect has been minimal. Most efforts have been directed at the prime contractor level with little effect to date. This research examines the complex array of factors which result in productivity enhancing capital investment and raises the question of what has been accomplished at the subcontractor level.

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TABLE OF CONTENTS

I. INTRODUCTION.....10

A. RESEARCH OBJECTIVE.....10

B. RESEARCH QUESTION.....11

C. SCOPE, LIMITATIONS, AND ASSUMPTIONS.....12

1. Scope.....12

2. Limitations.....13

3. Assumptions.....14

D. RESEARCH METHODOLOGY.....14

E. ORGANIZATION OF THE REPORT.....15

II. BACKGROUND OF PRODUCTIVITY INITIATIVES.....16

A. INTRODUCTION.....16

B. PROFIT POLICY CAPITAL INVESTMENT INITIATIVES.....16

1. Profit '76.....16

2. Defense Acquisition Circular 76-23.....19

3. Profit '82.....20

4. Defense Financial and Investment Review (DFAIR).....21

5. Summary.....22

C. DEFENSE INDUSTRY PROFITABILITY AND CAPITAL INVESTMENT.....22

D. INDUSTRIAL BASE PRODUCTIVITY.....27

E. CURRENT DOD PRODUCTIVITY INITIATIVES.....28

1. Introduction.....28

2. Industrial Modernization Incentive Program...29

3. Industrial Technology Modernization.....31

4. Manufacturing Technology Program.....31

5. Summary.....32
F. SUBCONTRACTOR AWARENESS.....33
1. Subcontractor Health.....33
2. Subcontractor Unfairness.....35
3. Subcontractor Overview.....36
G. SUMMARY.....37
III. INTERVIEW/SURVEY BACKGROUND AND DEVELOPMENT.....38
A. INTRODUCTION.....38
B. SURVEY/INTERVIEW BACKGROUND.....39
c. PRIME CONTRACTOR INTERVIEW DEVELOPMENT.....40
D. SURVEY DEVELOPMENT.....41
E. DOD INTERVIEW DEVELOPMENT.....43
F. SUMMARY.....43
IV. INTERVIEW/SURVEY DATA PRESENTATION AND ANALYSIS.....44
A. INTRODUCTION.....44
B. PRIME CONTRACTOR INTERVIEW RESPONSES.....45
C. SURVEY RESPONSES.....50
1. Demographic Data.....51
2. Prime Contractor Incentivization Concern.....60
3. DOD Incentivization Program Awareness.....70
4. DOD Business Profitability.....73
D. DOD INTERVIEW RESPONSES.....77
E. SUMMARY.....81
V. PRINCIPAL FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS.84
A. PRINCIPAL FINDINGS AND CONCLUSIONS.....84
B. RECOMMENDATIONS.....86

C. RECOMMENDATIONS FOR FURTHER RESEARCH.....87

D. ANSWERS TO RESEARCH QUESTIONS.....88

APPENDIX A: PRIME CONTRACTOR INTERVIEW QUESTIONS.....91

APPENDIX B: SUBCONTRACTOR SURVEY QUESTIONNAIRE.....92

APPENDIX C: SUBCONTRACTOR QUESTIONNAIRE MAILING LIST.....96

APPENDIX D: DOD PERSONNEL INTERVIEW QUESTIONS.....119

APPENDIX E: SURVEY NARRATIVE QUESTION COMPILATION.....120

APPENDIX F: SURVEY NUMERICAL COMPILATION.....150

APPENDIX G: SIC CODES AND DEFINITION.....171

LIST OF REFERENCES.....173

INITIAL DISTRIBUTION LIST.....176

LIST OF TABLES

Ia. Firm/Division Number of Employees: Total Population.....52

Ib. Firm/Division Number of Employees; Greater than 75% DOD Subcontracts.....52

IIa. Total Business/Sales with DOD; Total Population....54

IIb. Total Business/Sales with DOD; Greater than 75% DOD Subcontracts.....54

III. DOD Business in the Role of a Subcontractor; Total Population.....55

IV. DOD Business in the Role of a Subcontractor; Greater than 75% Total DOD Business.....55

V. Annual Dollar Sales as a DOD Subcontractor; Total Population.....56

VI. Annual Dollar Sales as a DOD Subcontractor; Greater than 75% DOD Subcontracts.....56

VII. Basic Manufacturing Process; Total Population.....58

VIII. Basic Manufacturing Process; Greater than 75% DOD Subcontracts.....58

IX. Incentivization Effectiveness; Total Population....64

X. Incentivization Effectiveness: Greater than 75% DOD Subcontracts.....64

XI. Prime Contractor Interest in Continued Viability of Subcontractor.....65

XII. Basis for Capital Investment; Total Population.....66

XIII. Basis for Capital Investment; Greater than 75% DOD Subcontracts.....67

XIV. Basis for Capital Investment; Greater than 75% Total DOD Business.....67

XV. Subcontractors Perception of Need for Prime Contractors to Provide Capital Investment Incentives.....69

XVI. Basis for Measurement of Profitability; Total Population.....75

XVII. Basis for Measurement of Profitability; Greater than 75% DOD Subcontracts.....75

XVIII. Government Versus Commercial Profitability.....76

I. INTRODUCTION

A. RESEARCH OBJECTIVES

Productivity enhancing capital investments by defense contractors have been a prime concern of Congress and DOD since the early 1970s. Then Deputy Secretary of Defense William P. Clements directed a full scale study of DOD profit policy with the goal of developing a policy that would motivate defense contractors to make capital investments which would reduce DOD acquisition costs [1:1]. Since these original efforts, improvement of incentives for capital investment has been a high priority item within DOD. Efforts came to a peak in early 1980 when Deputy Secretary of Defense Frank Carlucci included "Encouraging Capital Investment to Enhance Productivity" as an action item of the Acquisition Improvement Program (AIP). The action included eight subactions with responsibility for implementation placed under the purview of the Under Secretary of Defense for Research and Engineering (USDRE) "Industrial Productivity Office" [2:22]. The AIP productivity enhancing capital investment initiatives have resulted in a number of efforts mostly targeted at the prime defense contractor level [3:10-11].

Considering the size and impact the subcontractor base has on DOD business, the question of what is being done at

the subcontractor level requires addressing. The level of DOD business accomplished at the subcontractor level is between 40 and 70 percent with a nominal value of 50-60 percent [4:43]. In fact, much more production is done and more dollars spent at the subcontractor and vendor levels than at the prime contractor level (e.g., the B-1 program has 3000 subcontractors/vendors) [5:41]. Owing to this level of subcontractor involvement in DOD business, there is some thought that prime contractors should be encouraged to pass on the positive financial actions initiated by the Government [4:27].

The purpose of this research is to examine whether or not there has been any productivity enhancing capital investment initiative flowdown from the prime contractor level to subcontractors. The intent is also to test the validity of current literature concerning the erosion of surge capacity and the profitability of defense business compared to commercial business at the subcontractor level.

B. RESEARCH QUESTION

Given the preceding general objectives, the following primary research question was posed: What methods do prime defense contractors utilize to incentivize subcontractors to invest in productivity enhancing facility improvements?

The following subsidiary research questions were deemed pertinent in addressing the basic research question:

1. What have been the results of the DOD profit policy to date in incentivizing prime contractors to make capital investments?

2. Are prime contractors concerned with improving the productivity of subcontractors?

3. Is there a flowdown of profit policy incentives to the subcontractor?

4. How do defense subcontractors view the present profit policy and do they perceive any impact on their organization?

5. On what basis are capital investment decisions made at the defense subcontractor level?

6. What impact have programs for improvement of capital investment, other than DOD profit policy, had on subcontractors?

7. How effective are prime contractors' programs for incentivizing subcontractors to make capital investments and are these programs applicable for DOD use?

8. What are the characteristics of the defense industrial base at the subcontractor level?

9. Should DOD have a flowdown policy for incentivizing subcontractors through prime contractors?

C. SCOPE, LIMITATIONS, AND ASSUMPTIONS

1. Scope

To complete the research in the time required, it became apparent that a limited segment of prime contractors to interview and from which subcontractor information could be derived would be necessary. To this end, two aerospace and two shipbuilding prime contractors were targeted. The interview and subcontractor data presented is therefore, necessarily biased toward these two industries. However, it was felt that by combining the information received from

these two diverse industries, a representative cross section of the defense industrial base would emerge.

Each prime contractor provided a list of subcontractors they thought were subcontractors greater than 75 percent of the time. The resulting list of subcontractors received from the prime contractors was further stratified resulting in a total population of 258 subcontractors for this study. To provide a complete perspective, a number of DOD personnel within the productivity enhancement area were interviewed to gain insight into their perceptions of the subcontractor base and the prime/subcontractor capital investment incentivization relationship.

2. Limitations

The major limitation resulted from the lack of information concerning a precise definition of what constituted a subcontractor. The term subcontractor is easily definable, however, to address defense subcontractors whose major portion of DOD business is in the role of a subcontractor, poses a significant challenge. The thrust of the research was to determine what methods prime contractors use to incentivize subcontractors to make productivity enhancing capital investments. Therefore, it was desirable to obtain contractors who were, in fact, subcontractors and not prime contractors who are privy to DOD capital incentivization programs. This purification of contractors evolved as a major limitation.

In conjunction with the above problem, each prime contractor possessed different data processing capabilities which further exacerbated subcontractor definition. Also, a thorough search of Government resources indicated a lack of data concerning the defense subcontractor base. In fact, information concerning subcontractors has not been collected by the Government since 1963 [4:129].

The lack of current literature concerning the subcontractor industrial base posed a limitation in attempting to understand the dynamics and interrelationships of the base.

3. Assumptions

Underlying the entire research was the presumption that prime contractors are concerned with the economic health and viability of their subcontractors. Additionally, it was assumed that prime contractors have, by some means, incentivized their critical subcontractors to make capital investments in order to improve productivity and ultimately lower prices.

Also, this study assumes that the reader commands a general knowledge or basic familiarity with DOD contracting language and the Defense acquisition process.

D. RESEARCH METHODOLOGY

The research methodology utilized in this study consisted of four basic components: (1) development of a literature base by use of the Defense Logistics Studies

Information Exchange and the Defense Technical Information Center and review of various journals and periodicals which concern themselves with the federal acquisition process; (2) interviews with four prime defense contractors; (3) a survey of 258 subcontractors; and (4) interviews with DOD personnel involved in capital investment incentivization. The data collected from the interviews and questionnaires are presented in Chapter V.

E. ORGANIZATION OF THE REPORT

This report takes the reader through the subject at hand in the most logical manner possible. Chapter II presents some basic background information concerning profit policy, defense industry profitability, prime contractor capital investment, defense industrial base productivity and DOD awareness of subcontractor problems. Chapter III describes the development and background of the interviews and questionnaire development. Chapter IV is an in-depth presentation and analysis of the interviews and questionnaire data. In Chapter V, conclusions and recommendations are proffered.

II. BACKGROUND OF PRODUCTIVITY INITIATIVES

A. INTRODUCTION

This Chapter will chronicle productivity enhancing capital investment efforts that have evolved from the mid-70s to present. Aslo addressed will be aspects of defense industry profitability, prime contractors capital investment, industrial base productivity and awareness of subcontractor capital investment needs at the DOD and prime contractor level.

The information provided in this chapter will present the concern of DOD relating to the productivity of the defense industrial base and the many efforts to correct the problem. It will then evolve to ascertain the efforts directed at the subcontractor level.

B. PROFIT POLICY CAPITAL INVESTMENT INITIATIVES

1. Profit '76

During the mid-70s, concern in DOD over the softness of the defense industrial base, the low level of capital investment and low profitability led then Deputy Secretary of Defense William P. Clements to direct a full-scale study of the DOD Profit Policy. The goal of the study was to develop policy revisions needed to motivate defense contractors in making capital investments which would reduce defense department acquisition costs [1:11]. The study

indicated that profits as a percent of sales and return on investment (ROI) were lower for defense compared to commercial business. This fact prompted Deputy Secretary Clements in his testimony before the Joint Committee on Defense Production to observe that:

> ...if it is efficient in the commercial marketplace for for the Federal Trace Commission durable goods producers to employ about 2 1/2 times the amount of facilities per dollar of sales compared to the defense producer, then there are probably productivity gains that could be made if defense contractors increased their investment [6:39].

A major deterrent to the Weighted Guideline (WGL) method of deriving a negotiated profit resulted from an inverse relationship between risk and profit. A higher return was provided on low risk than on high risk contracts [1:7]. Additionally, the prenegotiation profit objectives provided more profit on purchased direct materials, which required less investment, than for investment intensive contracts. A survey of 56 financial institutions to determine the availability of capital to defense contractors revealed that unless problems in negotiated procurements and profit levels were reduced, defense contractors would find it increasingly difficult to find the financing required [1:7]. In his paper on defense contractor profits Lt Col Letzkus quoted Mr. Frank A. Schrontz, then Assistant Secretary of Defense (Installation and Logistics), who stated:

> Over the last several years, the level of contractor facility investment in Department of Defense contracts has been considerably lower than in comparable commercial endeavors, even after taking into account government-furnished facilities and equipment. The reasons for contractor

> reluctance to invest in modern machinery and equipment for use on DOD contracts are many and varied, but it is clear that some are rooted in present procurement policy which fails to recognize adequately (either in profit or as an allowable cost) the facility investment which may be required for efficient operation....[7:22]

The ultimate changes brought about by Profit '76 were promulgated in Defense Procurement Circular (DPC) 76-3. There were two major changes to DOD profit policy. First, the imputed cost of capital for facility investment would be considered to be an allowable cost for most negotiated contracts which were priced on the basis of cost analysis. Second, the contractor's level of facility investment is now recognized in reaching a prenegotiation profit objective under the WGL method. The logic of the profit policy was the use of profits to motivate contractors to increase capital investment to modernize facilities and equipment, thereby, in the long run, reducing the expense of defense procurements [7:2-3].

Subsequent analysis of the effects of DPC 76-3 relative to contractor investment in equipment and facilities revealed that contractors had not taken advantage of the incentive aspects of investment to increase productivity [8:13]. Another study conducted by the General Accounting Office (GAO) determined there was little indication that contractors has responded positively to upgrading facilities and equipment. This was due to the minimal level of emphasis given capital investment in DPC 76-3 (10% of the profit objective). The productivity award enhancement of DPC 76-3 lacked

sufficient criteria for determining appropriate profit allowance for productivity improvements. The report indicated in general terms that the improvements initiated had not, in fact, been successful and had done little more than increase the profits realized by defense contractors' without an offsetting increase in capital investment and resultant cost reductions due to efficiency. [9:i-iii]

2. Defense Acquisition Circular 76-23

Based on the GAO report and other internal DOD studies it became apparent that a revision to the WGL method was necessary. The change manifested itself in Defense Acquisition Circular (DAC) 76-23 in February 1980. Major changes to the WGL included increasing the facilities investment factor from 6-10 percent to 16-20 percent and changing profit policies for research and development and services contracts [10:2]. The intent of the percentage changes was to place more emphasis on the facilities investment portion of negotiated profits thereby enticing contractors to increase capital investment.

Although DAC 76-23 provided increased importance on facilities investment, cost was still the primary basis for determining profits. In fact, cost still determined 72 percent of the total profit objective [11:17]. Therefore, the contractor remained as likely to forego capital investment. A study to determine the effectiveness of DOD's Profit Policy was conducted nine months after the implementation of

DAC 76-23 and was focused at the "grass roots" Contracting Officer level. It concluded that the specific incentives of facilities capital and the productivity reward were having little or no effect on contractor investment patterns. [6:62]

Even with the extra emphasis on facilities capital put in place by DAC 76-23, little increase in contractor investment for more productive equipment and facilities was transpiring. A factor of significant importance that must be understood is the relationship between a cost based profit policy and capital investment. Under DPC 76-3 and DAC 76-23, any profit gained would be offset to some degree by a profit loss from a reduction in profit based on costs. This result is a consequence of the cost reducing effects of the greater efficiency resulting from the increase in investment [7:18]. It was becoming clearer at the time that profit policy in and of itself cannot stimulate productivity enhancing capital investment.

3. Profit '82

With the waters of the profit issue muddied to the extent delineated above, the Air Force Systems Command undertook a study to determine the precise state of the profit policy and what could be done to correct deficiencies. Profit '82 attempted to emulate as closely as possible the events and data used in Profit '76. By using this technique, analysis of the effects of policy changes could be evaluated.

Pertinent to this research are the findings relative to contractor productivity and capital investment. Some of the findings of Profit '82 includes [12:53-56]:

1. "By itself, profit will not induce capital investment."
2. The structure of DPC 76-3 did not adequately reward capital investment."
3. "The profit policy changes under DAC 76-23 significantly reduced the potential impact of profit on capital investment."
4. "The WGL special productivity factor has not been used."

The study went on to make the following recommendations relative to productivity and capital investment intent of the profit policy [12:57-58]:

1. "DOD must have realistic expectations of the true relationship between profit policy and capital investment."
2. "DOD should revitalize the special productivity factor."

Profit '82 continued the profit policy saga and added more veracity to the conjectures that a cost-based profit policy by itself is not the means by which to motivate contractors to make productivity enhancing capital investments.

4. Defense Financial and Investment Review (DFAIR)

In a letter to the Comptroller General in September 1983, the Chairman of the Defense Subcommittee, Congressman Addabbo, stated that, during the fiscal year 1983 Congressional shipbuilding hearings, the facilities cost of capital had become an issue. It was concluded that making cost of money for facilities capital an allowable cost does not

induce contractor investment in cost reducing facilities. The letter went on to direct a complete full-scale study of Cost Accounting Standard 414 and DOD's profit policy comparable in scope to Profit '76. Additionally, in December 1983, Deputy Secretary of Defense Paul Thayer directed the Deputy Undersecretary of Defense (Acquisition Management) Ms. Mary Ann Gilleece to initiate a new study of DOD pricing policies. DFAIR was conceived and, like Profit '82, will emulate as closely as possible Profit '76. Results from DFAIR are not known at this time and will not be available until the Spring of 1985.

It is anticipated that DFAIR may, in fact, produce some substantitive changes to DOD's Profit Policy.

5. Summary

Since recognition of inadequacies in the capital investment structure of defense contractors, profit policy has been used as the vehicle to correct the problem. Many studies and changes to the profit policy have demonstrated that profit policy alone cannot increase productivity enhancing capital investment. The next section will address the interrelated aspect of defense contractor profitability.

C. DEFENSE INDUSTRY PROFITABILITY AND CAPITAL INVESTMENT

To totally understand the interrelationships of capital investment, cost-based pricing, risk, profit policy, profit, profitability, ROI, return on equity (ROE) and return on assets (ROA), it is necessary to be able to mesh these

multifarious aspects into a congruous whole. All of these factors, and others such as corporate strategy and competition, play an important part in the decision-making process related to capital investments. It is beyond the scope of this research to minutely explain each of these factors and their relationships. However, it is necessary to look at the profitability aspect at a simple level to demonstrate the tradeoffs that will be made to ensure profitability.

For the purposes of this research, profit is defined as earnings after taxes, or net income. Profitability is defined as the measurement of profit relative to some base. There are several measures of profitability such as ROI, ROE, and ROA. [13:33]

A number of reports and studies have concluded that defense business is less profitable than commercial business and there is a migration away from defense business. For example see references 4, 5, 13, and 14. The following synopsis of facts tend to bear this fact out:

> On one large program in a 12-month period, there was a turnover of approximately 2500 subcontractors and suppliers out of 6,000. On one large aircraft program the prime received only 60 percent as many bids this year as received last year. [5:8]

> ...the top 25 defense contractors went from almost 40 percent of their business in the defense area in 1958 to under 10 percent of their business in the defense area by 1975. [4:39]

> Profit '76 showed that contractors' DOD business accounted for approximately two thirds of their total cost volume. Cost Accounting Standards Board cost of money data forms for 1980 projections for sixty-one

similiar profit centers indicate that DOD business is now only about 50 percent of their total. [15:37]

Depending on the indicator one looks at, defense business can be portrayed as being as profitable as commerical business. If one looks at profitability as a percent of sales, defense contractors are not as profitable as commercial businesses. However, if ROI is used as the indicator of profitability, defense contractors can be as profitable, or more profitable than their commercial counterparts or the commercial business within their own firms [4:87]. This anomaly can be easily explained when one considers the make-up of ROI. If there is little capital investment in facilities or equipment or if the Government provides equipment and facilities, the contractors return on invested capital is higher. In basic terms this is why defense industries have a ROI comparable or higher with their commercial counterparts. The question of why defense contractors invest less in capital than commercial companies can be explained by looking back at the use of a cost based profit policy and profit as a percentage of sales. With profits based on cost it becomes less enticing for a contractor to reduce costs by utilization of cost reducing capital equipment and can, in fact, reduce the profit in subsequent contracts. "Most contractors state frankly that they invest as little capital as possible in facilities for production on negotiated contracts to avoid reducing their ROI." [11:16] This concept relates to the previous discussion of profit

policy and the cost based determination of profit coupled with the fact that DOD profits must be comparable with commercial profits [15:37]. The prudent businessman will, over the long run, take the necessary steps to balance risk and reward. If the balance cannot be achieved through an acceptable level of profit, it will be achieved through an acceptable level of profitability. Avoiding added investment is a tempting course of action and is a viable business strategy if the firm is simultaneously reducing its participation in the defense market [13:34-35]. In September 1980 the House Committee on Armed Services held intensive hearings on the capability of the U. S. defense industrial base. These hearings were continued by a ten member Defense Industrial Base Panel, which found a serious decline in defense industrial capability. They found that for example:

> ...during the past decade, the U.S. aerospace industry invested approximately 2 percent of its sales in new capital assets. The average rate of investment for all U.S. industry during the same period was about 8 percent, and the average rate for all U.S. manufacturing was 4 percent....For example, 60 percent of the metal working equipment used in defense contracts today is more than 20 years old. [16:190]

To exacerbate the problem of capital investment at the defense contractor level is the availability of debt financing. Defense contractors price-to-earnings ratio and their bond ratings are low (about half as good as those of their civilian counterparts), and therefore most investment institutions are very reluctant to put their money in the defense sector [4:61-62]. Part of the reason for this is the

relative riskiness of defense firms based on the volatility of earnings. When viewed through the eyes of the financial market, a higher return is required to offset the relative risk [14:278]. In a 1976 report to the Investment Policy Study Group by The Conference Board, an independent nonprofit institution, they reported:

> ...in general, the financial community was pessimistic about the defense industry. Reasons given were unfavorable defense contract profits compared to commercial product profits, considering the risks that defense contractors face; uncertainty, both in fulfillment of contracts and winning of future contracts; and a number of other negatives such as the untoward effects on a defense contractor of certain DOD policies, procurement regulations and tactics, and administrative practices.... unless these problems can be reduced, if not eliminated, the defense industry is likely to find it increasingly difficult to secure both the short-term and long-term financing it requires [16:195].

Another factor which must be considered is the relative instability of defense business. There are a number of reasons for the instability including the annual appropriation cycle, congressional oversight, short term contracts. Instability in the acquisition process is the basic reason for the lengthening of acquisition lead time and discouragement of productivity enhancing capital investments [17:303]. This shortsighted approach to contracting does not allow industry to see far enough into the future to calculate the necessary ROI for capital investment. During the June 1984 Air Force Systems Command sponsored Chief Executive Officers Conference the question of "What incentives are likely to induce the defense industry to improve productivity with

new facilities and equipment?" was posed. The overwhelming concensus of responses cited stability as the major motivator of capital investment. [18:2-6]

In summary, depending on the indicator used, defense business can be portrayed to be as profitable as commercial business. However, upon closer examination, when using ROI as the indicator, it becomes obvious that the comparable profit effect is achieved through the use of small amounts of capital equipment. This interrelationship coupled with defense business instability is at the root of the productivity problems and has led to the decapitalization of defense contractors.

D. INDUSTRIAL BASE PRODUCTIVITY

Owing to the great variety of products and services contracted for, their respective inputs and outputs and the different internal measures of performance used in the defense industry, it is impractical to attempt to present a specific, restrictive definition of contractor productivity. Rather, the general definition of productivity as the relationship between input of resources and output of goods and services is adequate in understanding the concept of productivity. However, it must be noted that specific definitions relative to the specific contract must be derived in order to actually measure productivity for that particular contract. The inability to perform this function resulted in the failure to effectively utilize the productivity portion of the WGL referred to earlier. [19:7]

The result of reduced capital investment has manifested itself in decreased productivity. The decrease in capital investment outlined in the previous section has been systemic within the defense industry as many defense contractors have opted for an asset strategy which maximizes returns in the short-run [20:4]. This short-run attitude has not been confined solely to defense contractors, but has been more prevalent than in the commerical marketplace. As a whole, the U.S. was behind Japan, Canada, Germany, France, and the United Kingdom in average annual rate of capital investment as a percent of output for 1983 [21:1]. This is a trend that has plagued U.S. industry since the early fifties. Recent articles in the Wall Street Journal and Business Week have catalogued the reversal in this trend over the past two years. A number of reasons (e.g., the strength of the dollar and competitive forces) are fueling the turnaround.

DOD is undertaking a number of programs and initiatives to improve the posture of productivity enhancing capital investments and productivity as a whole within the defense industrial base. The next section will expound on these initiatives.

E. CURRENT DOD PRODUCTIVITY INITIATIVES

1. Introduction

As a result of the 1980 Defense Industrial Base hearings, the Secretary of Defense told Congress in the 1982 posture statement that "productivity in defense-supporting industries is too low" [16:190]. In the subsequent

promulgation of the so called "Carlucci initiatives", a great deal of effort and time has been spent on the productivity issue [16:190]. AIP Action 5 (Encouraging Capital Investment to Enhance Productivity) and the eight subactions in conjunction with other Action items (e.g., Multiyear Procurement, Program Stability and Increase Competition in the Acquisition Process) are intended to provide an integrated approach to the resolution of capital investment and productivity problems. In May 1981 Dr. Richard DeLauer established a DOD Task Force to Improve Industrial Responsiveness (TFIRE), a joint service team to address the industrial preparedness issue. One of the results was a draft DOD Guide entitled Improving Productivity in Defense Contracting [16:207]. The guide proposes a number of ways that productivity can be improved. Some of these are, (1) termination protection, (2) award fees, (3) shared savings provisions, and (4) Government technology funding [20:12-21].

2. Industrial Modernization Incentives Program

Dr. DeLauer established a tri-service committee, chaired by the Navy, in February 1982 to prepare a proposed unified DOD policy on "technology modernization". The report back to the Deputy Secretary of Defense recommended an innovative new program entitled Industrial Modernization Incentives Program (IMIP). The Deputy Secretary then

established a steering group with RADM J. Sansone as the chairman to test the concept. [22:1]

The IMIP program is a successor to the Technical Modernization (TECHMOD) program instituted by the Air Force. Although IMIP expands on the TECHMOD program, IMIP is applied through a formal agreement between industry and DOD which contains incentives for modernizing and improving the productivity of the industrial base. The IMIP agreement is based on a structured analysis which evaluates the needs of the overall facility and, after Government validation is implemented through the increased use of manufacturing technology, modernization and engineering/management applications in the facility. It is expected that the incentive structure of IMIP will allow industry to substantially increase capital investments, primarily with their own financing.

IMIP is not limited to strictly capital investment incentives. It also emphasizes making productivity improvements in all facets of the manufacturing process. The incentive structure of IMIP includes a shared savings reward based on increased productivity achieved through capital investment. Contractor investment protection through the use of an unfunded contingent liability guarantee allows for Government compensation of the undepreciated balance of the capital assets in the event of premature termination [23:23-26]. Additionally, IMIP is not necessarily

targeted at a single contract, but can cover a group of contracts or all contracts in a facility [24].

A notable aspect of IMIP is that it recognizes the need and identifies the means by which subcontractors and vendors will be included in the program.

The IMIP test program has been decentralized to allow each DOD component to pursue incentives they feel will best encourage productivity enhancing contractor capital investment [23:26].

3. Industrial Technology Modernization

As noted earlier, the Air Force TECHMOD program was in existence prior to IMIP. The most notable contract under TECHMOD is the F-16 aircraft program at General Dynamics/Ft. Worth. The program has been successful and spawned the Industrial Technology Modernization (ITM) program, which is basically the TECHMOD/IMIP equivalent for subcontractors. The difference is that the prime contractor organizes and executes the program.

Currently in the Navy, plans are underway and being implemented which will pass IMIP incentives to subcontractors. The firms to attempt these first efforts are Grumman Aerospace and General Dynamics/Morton Thiokol [25:10].

4. Manufacturing Technology Program

Also resulting from AIP Action 5, was the Manufacturing Technology (MANTECH) program. The objective of MANTECH is "to assure that advanced manufacturing processes and

equipment are available to defense contractors to enable them to significantly improve their productivity and responsiveness as elements of the defense industrial base." The proclaimed purpose of the program is "to reduce material acquisition costs and lead times by providing the advanced manufacturing technology necessary to improve industrial base productivity in those situations where the private sector is unable or unwilling to do so." [16:201] Unlike IMIP, MANTECH is totally funded by Government sources. MANTECH capital equipment is usually pushing the state-of-the-art and is not, for various reasons, cost effective enough for private industry to purchase the equipment. Each of the three services sponsor their own MANTECH program.

5. Summary

As demonstrated by the number of initiatives and programs promulgated over the past four years, the issues of productivity and capital investment have moved to the forefront. It should be remembered that these initiatives/programs are intertwined with other initiatives and should be viewed holistically. The intent is to weave into the entire acquisition process the tools with which to motivate contractors. When looked at as a whole, it is easily discerned that the majority of initiatives are intended to provide stability to the acquisition process. It is stability that is so necessary in the capital investment decision making of prudent businessmen.

F. SUBCONTRACTOR AWARENESS

The reason for this research, as noted in Chapter I, is to answer questions relative to the incentivization of productivity enhancing capital investment efforts at the subcontractor level. In order to address the subject it is first necessary to present some background and characterization of the defense subcontractor base. The defense subcontractor base is not easy to characterize due to the fact a subcontractor can range from an extremely small single product/service firm to the largest of corporations. The intent of the researcher is to address the subcontractor who is, in fact, a subcontractor a majority of the time. Since 1963, DOD has not collected any information on the subcontractor level and below. This exacerbates the characterization of the subcontractor base [4:129]. A report completed by the Rand Corporation for the Air Force in 1977 found that the lower tiers of the defense industrial base were not easily identifiable [26:3]. The largest source of information found relating to subcontractors was The Defense Industry by J. Gansler.

1. Subcontractor Health

It is unclear from current literature whether the subcontractor base is healthy or adequate for current needs. Depending on the source, conflicting data is derived. The following are examples of available data:

> ...ample surge capacity at prime level but not at the subcontractor level. [4:5]

> Subcontractors and parts suppliers represent the bottleneck in the production surge capacity. [4:128]
>
> ...1968-1975 number of active aerospace-industry subcontractors decreased from over 6,000 to under 4,000.... Between 1970-1975 the Air Force reported that the number of subcontractors leaving defense per year more than doubled. [4:129]
>
> In general small defense contractors (subcontractors and suppliers) have lower profits and far higher risks than larger ones. [4:138]
>
> Subcontractors often need to borrow working capital; however, in most cases they are less able than the prime contractors to obtain non-bank financing. This is principally due to the size and/or financial condition of the subcontractors and suppliers. When profits from DOD contracts are minimal subcontractors do not make capital investments. Additionally, when profits are low many small and intermediate size companies find it beneficial to leave the defense marketplace. [5:26]
>
> Lower tiers of the industrial base have adequate capacity to produce products for the Air Force in peace time. [26:24]
>
> When firms choose to exit the defense business, they seem to be primarily motivated by a decline in the demand for their products rather than any disenchantment with military business. [26:42]

As the above quotes demonstrate, typifying the health of the subcontractor/supplier base is not easily accomplished. Part of the reason is the diverse levels of subcontractors coupled with the difficulty in identification. Based on the 1980 Defense Industrial Base Panel's conclusion of an overall erosion of the defense industrial base, it can be safely concluded that problems at the subcontractor level do exist.

2. Subcontractor Unfairness

All of the problems documented earlier relating to profitability for prime contractors apply to subcontractors. There are a number of reasons which cause the plight of the small to intermediate-sized defense subcontractor to be more tenuous. The following chronicle some of these reasons:

a. A dual economy comprising the large contractors and the subcontractors/suppliers are treated equally through legislation, policies and regulations which hide the subcontractors' problems [4:128].

b. Some subcontractors have a single product and are tied to one prime contractor [4:137].

c. Subcontractors are required to supply their own plants and equipment, unlike a number of prime contractors, and make less ROI in comparison with prime contractors and civilian counterparts [4:5].

d. Because the profits of Government contractors are restricted and the cost of borrowing money cannot be considered an allowable cost, many small contractors and suppliers can be "pushed" out of Government business [5:18].

e. Inability to obtain needed non-bank financing [4:137].

f. Instability which manifests itself in subcontractors vulnerability to stretchouts and cancellations [4:137].

g. Continual threat of vertical integration by the prime contractor during periods of slack business [4:137].

h. Overall lack of management talent [4:137].

As can be seen the defense subcontractor has, for the most part, more of an "uphill" climb than prime contractors. Instability at the prime contractor level is magnified at the subcontractor level. As noted above the subcontractor is less able to cope with program stretchouts

and is extremely vulnerable to vertical integration by the prime contractor. Additionally, contract risk is regularly passed down from the prime contractor to the subcontractor. "One study found that in more than 85 percent of the cases where the prime contractor had a cost-plus-fee contract, the subcontractor had a "firm fixed-price contract" [4:146].

3. Subcontractor Overview

Subcontractor problems and deficiencies are beginning to come to the forefront. This recognition started with the 1980 Defense Industrial Base Panel and is beginning to become a part of current thinking. A recent Air Force/ Industry study of the aerospace industrial base entitled Blueprint for Tomorrow included subcontractors as part of the study. Conclusions from the study found that "subcontractors were not receiving the same opportunities afforded prime contractors and the subcontractor market is a roller-coaster driven by uncertainty" [27:24]. Some of the recommendations that evolved were directed at the subcontractor level (e.g., provide increased opportunities to subcontractor base and inclusion of subcontract program in the business strategy of systems programs) [27:62].

The use of IMIP is beginning to be implemented at the subcontractor level which, if successful, should provide incentivization for productivity enhancing capital investment.

The crux of current literature tends to indicate that the subcontractor base is a nebulous entity which is not sufficient to meet surge and mobilization capacity; however, there is conflicting data. Little has been done to date to provide incentives for improvement of the subcontractor base, but current initiatives are beginning to address the problem.

G. SUMMARY

This chapter has chronicled the means by which DOD has attempted to motivate defense contractors to make productivity enhancing capital investments, prime contractor capital investment, and productivity, and current productivity measures. The discussion then evolved to describe subcontractor base problems and incentivization initiatives.

The next chapter will provide data concerning the background and development of the interviews and survey conducted.

III. INTERVIEW/SURVEY BACKGROUND AND DEVELOPMENT

A. INTRODUCTION

As has been alluded to throughout this paper, the continued concern over the eroding industrial base coupled with the Government's efforts to incentivize productivity by enhancing capital investment at the prime contractor level, begs the question of what has been happening at the subcontractor level. A thorough research of current literature did not reveal any definitive information concerning the economic health of the subcontractor industrial base, other than the references previously cited. They only generally indicate there is a decrease at the subcontractor level accompanied by longer lead times for certain materials/components. However, the literature is rife with information and data concerning the health and productivity of different segments of the prime contractor community. For example, see References 1, 4, 13, 14, 20, and 21. As a result of this apparent disparity, once again considering that the industrial base is composed of 50-70% subcontractors, the question of whether or not prime contractors are as interested in their subcontractors' productivity and continued viability as the Government is with the primes' poses a significant question. This chapter will explore the logic, direction and interrelationships of the questions embodied in the interviews and questionnaire.

B. SURVEY/INTERVIEW BACKGROUND

The survey and interviews were intended to determine whether or not there had been any flowdown of investment incentives from the primes to subcontractors. Considering the limited time and resources available, four major DOD prime contractors, two each from the aerospace and ship-building industries, were selected for interviews and to provide information concerning their subcontractors. The interviews were conducted on a nonattribution basis to foster candid responses and to preclude the necessity of higher authority approval.

Although different at each prime contractor's facility, the persons interviewed included a Vice-President for Finance, a General Manager, Subcontract Directors and Material Directors. In addition to obtaining a general background concerning their experience, standard questions were asked of each individual. A copy of the interview questions are contained in Appendix A. The information requested concerning subcontractors was in the form of a list of subcontractors, which the primes narrowed down using the parameters previously discussed of greater than 75 percent of the subcontractors business being in the role of a subcontractor. This turned out to be an almost impossible task and the primes attempted to tailor the list through their personal experience. Their lists were further purified with the final result being a total of 258 subcontractors identified and mailed a

questionnaire. A copy of the questionnaire is contained in Appendix B. Once again, to elicit candid and honest responses, they were informed that all responses were non-attributable, and no means of determining the individual company's responses were included in the questionnaire. The names of the companies which were mailed surveys are listed in Appendix C. In addition to industry interviews and a survey, a number of leading DOD personnel working in the various productivity enhancing and profit policy offices were interviewed. These interviews were conducted to attempt to gain an "inside" perspective of DOD current thought and policies concerning the enhancement of the subcontractor base. A copy of the interview questions is included as Appendix D.

C. PRIME CONTRACTOR INTERVIEW DEVELOPMENT

Four major DOD prime contractors' Material and Subcontractor Management personnel were interviewed to gain insight into corporate efforts to motivate subcontractors to improve productivity. The interview was designed to identify any and all efforts exerted by the prime, not exclusively capital investment initiatives.

Another major topic addressed was the prime contractors' perception of the state of the subcontractor industrial base. Identification of material or service delays, excessive lead times or any critical shortages being experienced were considered important indicators.

The interviews were structured to also determine any incentivization efforts that were successful and had the potential to be emulated by DOD.

Although not a scientifically founded analysis, interviewees were asked to comment on the success of the capital investment incentivization efforts at their level of the current profit policy. The logic was to ascertain whether there was any disparity between their comments and the documented lack of success of the policy to incentivize capital investment.

D. SURVEY DEVELOPMENT

The overriding consideration in developing the survey questionnaire was to ask questions which would answer the primary and ancillary research questions from the subcontractors' point of view. Due to the number of companies and the need to determine which companies fell within the "greater than 75 percent" parameters, the questionnaire was mailed to each.

The questions were structured to accomplish the following objectives:

1. Determine the size of the firm/division
2. Total and subcontract business with DOD
3. Manufacturing make-up
4. Awareness and effect of DOD Profit Policy and other incentivization programs
5. Perception of prime contractor interest in subcontractors
6. Basis for capital investment

7. Perception relative to profitability of DOD business to commercial

8. Opinions concerning the need for prime contractor incentivization of subcontractors

The first few questions were used to determine the extent of business as a subcontractor in order to definitize and isolate those subcontractors with greater than 75 percent of their DOD business in the role of a subcontractor. Additionally, a general impression of the capital intensity of the firms was desired. Although a sidelight, this parameter was felt to be a relevant factor concerning the need for capital investment.

The next area addressed was to ascertain whether subcontractors were aware of incentivization efforts by the DOD and how these efforts had affected them. The questions then evolved to determine whether there existed any effort on prime contractors' part to motivate subcontractors to make productivity enhancing investments. If there was a negative response to the primary question, a further iteration of the question was used as a means to determine whether there existed a perceived concern for the subcontractor by the prime. The final question on incentivization was to secure the subcontractors' opinion of the need for prime contractors to provide capital investment incentives.

The subsidiary questions addressing the firms means of measuring profitability as well as profitability of DOD

business compared to commercial business were intended to assist in comparing the responses with current literature.

E. DOD INTERVIEW DEVELOPMENT

To develop a well-rounded picture of the subcontractor incentivization question, it was necessary to interview knowledgeable personnel within DOD. These interviews, also on a nonattribution basis, were conducted with the intent of determining the perceptions and opinions of persons intimately knowledgeable with the current productivity initiatives and with past and present profit policy incentives for productivity enhancing capital investment. The interviews examined their opinions concerning the health of the subcontractor industrial base, prime contractor efforts in incentivizing subcontractors, and whether primes and/or the DOD should be concerned with incentivizing subcontractors.

F. SUMMARY

This chapter has provided an in-depth overview of the background and development of the interviews and the survey questionnaire used. Also, the intent and logic behind the questions used in the interviews and questionnaire were identified.

The following chapter will present and analyze the data generated by the interviews and questionnaire.

IV. INTERVIEW/SURVEY DATA PRESENTATION AND ANALYSIS

A. INTRODUCTION

The previous chapter discussed the framework and objectives of each portion of the interviews and questionnaire as well as the overall objectives. This chapter will provide a presentation of the data derived from the interviews and questionnaire.

The focus of the research was to be on the firms with greater than 75 percent of their DOD business in the role of a subcontractor. The firms which met this criteria were considered the "target group". The target group is the main thrust, however, other groups emerged which provided additional information and insight and are included in the data presentation and analysis.

The diverse results of the interviews and survey are presented in a logical sequence which will be assimilated into a cohesive analysis in the summary portion of each section. These segments include: (1) Prime Contractor Interviews; (2) Survey Responses; (3) Survey Demographic Data; (4) Prime Contractor Incentivization Concern; (5) DOD Incentivization Program Awareness: (6) DOD Business Profitability; and (7) DOD Interview Responses.

B. PRIME CONTRACTOR INTERVIEW RESPONSES

Four major prime contractors, two each from the aerospace and shipbuilding industry, were targeted to provide subcontractor information and as interview subjects. In order to protect the anonymity of respondents there has been no attempt to separate the responses provided in the interviews by industry owing to the fact that the intent of the study was to, as much as possible, make aggregate observations.

The first area addressed was the prime contractors' level of concern with subcontractor productivity. In all cases, the responses indicated a low to non-existent concern. The perception at the prime level was that competition provided all the incentive required for productivity. Only when there was a sole source situation and the sole source was not meeting schedules or standards did the prime become interested. In this situation, one of two actions would be taken based on comparative costs. An effort to develop a second source was undertaken or, if the product required high non-recurring costs or extensive qualification, efforts to assist the subcontractor in meeting schedule/quality requirements were effected.

The second area addressed was flowdown of profit policy investment incentives to the subcontractor. Each interviewee indicated there was no effort on their part, as a prime contractor, to flowdown investment incentives. The main reasoning was a lack of need owing to competition providing

the needed incentives. However, one interviewee did indicate it was unwritten policy to use cost-type contracts with subcontractors if the prime's contract with the Government was a cost-type contract. This was accomplished to lessen the risk being passed on to the subcontractor.

The next question dealt with determining what method, if any, primes were using to motivate subcontractors in making productivity enhancing capital investments. Since abundant documented evidence exists relating to the lack of success of DOD capital investment incentives at the prime contractor level, the logic was to determine whether the prime's efforts in this area were successful and could serve as a model to be emulated by DOD. Unfortunately, all interviewees indicated there was no standardized or concerted effort on their part to motivate subcontractors to make productivity enhancing capital investments. It was indicated, once again, that competition provided the impetus for maintaining productivity levels commensurate with the marketplace.

The next area dealt with the prime contractors' perception of the health and apparent erosion of the subcontractor industrial base. The general opinion expressed was that there was an erosion of the base. This perception was owing to the fact that there were far more sole sources at the subcontractor level and subcontractors seemed to prefer commercial work where it was available. It should be noted

that within the shipbuilding industry, the indication was that there is less business available both in the Government and commercial arena which is causing the erosion. Another factor, and probably the most pervasive, was the instability associated with Government contracts. One firm cited a case in which fifteen aircraft were to be produced. The first year funds were restricted, then they were faced with a nine month stop work order. Another firm's statistics on manpower loading from 1952 to the present graphically displayed the acute changes in Government business loading. Mr. Jacques Gansler noted in his book The Defense Industry that the rate of vertical integration by defense prime contractors was higher than in the commercial sector and was causing the demise of a number of subcontractors [4:45]. Of the four primes interviewed, only one firm indicated that vertical integration was a policy within the company to attempt to provide constant workload and stability. However, all interviewees acknowledged that vertical integration had been used and would continue to be used whenever a deficiency existed in the supplier/subcontractor base. Another significant observation made by all but one of the interviewees indicated that while there were enough subcontractors available to provide current production needs, little if any surge capacity was available.

Next, the current innovations of TECHMOD, MANTECH, and IMIP were discussed to ascertain if any affect had been

experienced at the prime level and in the primes' opinion what affect the programs might have at the subcontractor level. Only one prime contractor had been involved in a program, which had not progressed beyond the initial survey stage. The lack of awareness of these programs was surprising, however, this could be attributable to the fact that the expertise of the personnel interviewed did not require familiarization with manufacturing efficiencies at the prime level. None of the interviewees thought that the programs would readily provide any effect on their subcontractors, however, considering the expertise level regarding these programs, the responses were discounted.

Considering the previous responses, answers to the question concerning long range commitments by primes to uphold the subcontractor base are not surprising. There was no known strategy, policy or plan either at the corporate or the strategic business unit level for providing a structured approach to enhancing the subcontractor industrial base.

The final question relating to subcontractors, was whether the prime contractors thought a policy at the Government/DOD level should be instituted to require a flowdown of capital investment incentivization. Again, not surprisingly, the responses were unanimously in the negative. The key concern was the current amount of directives and regulations with which they must contend. The addition of

more such regulations was not a popular subject. Even though it was felt the subcontractor base might be eroding somewhat, a directed flowdown policy was not seen as the answer. In essence, the pervasive thought seemed to be that there were enough subcontractors to provide for current production. Unless the Government wished to provide funding of some sort to increase the base and surge capacity, the primes were comfortable with the situation.

The final question was intended to determine whether the capital investment incentivization portion of the profit policy has had any impact on the capital investment decision-making process. Three of the respondents disclaimed any capital investment decisions being made on the basis of profit policy. Capital investment decisions were and are made on the basis of need, available capital and financial analysis. One respondent took the totally opposite view, stating that profit policy coupled with Cost Accounting Standard 414 have been key factors in capital investment decisions. To support this claim, a graph of capital investment growth over the past five years and projected growth (shown to the researcher) presented an almost exponential factor of growth. Questioning by the researcher of other prime contractors over the past year coupled with the above responses indicates that the capital investment incentivization intent of the profit policy has had spotty impact.

C. SURVEY RESPONSES

The search for respondents, as noted earlier, was conducted at each of the four prime contractors. Ultimately a survey base of 258 subcontractors was selected. Of this number, sixty-seven responses were received, for a 25.97 percent response rate. Although not as high as desired, the number was considered sufficient to proceed with valid research analysis.

Owing to the breadth of the subcontractor base which responded and the number of respondents which did not fit into the "greater than 75 percent subcontractor" range, it was determined that, in addition to the analysis of the target group, a broader analysis should be pursued. To this end, the contractors were segregated into six subgroups for analysis. The subgroups were comprised of the following:

1. Contractors with greater than 75 percent DOD business as a subcontractor
2. Contractors with less than 75 percent, but greater than 10 percent DOD business as a subcontractor
3. Contractors with less than 10 percent DOD business as a subcontractor
4. Contractors with greater than 75 percent of their total business as a DOD contractor
5. Contractors with less than 75 percent, but greater than 10 percent of their total business as a DOD contractor
6. Contractors with less than 10 percent of their total business as a DOD contractor

This categorization allows for analysis of each distinct characteristic in relation to the total population surveyed as well as the "greater than 75 percent" subcontractor group. Appendixes E and F provide a detailed segregation of explanatory and numerical responses by subgroup.

1. Demographic Data

The first five questions were developed to determine the size of the subcontractors, extent of subcontracting, dollar volume, basic manufacturing processes, and amount of subcontracts won on a competitive basis.

Question 1 provided data concerning the size of the firm/division in terms of employees. Results for the total population and "greater than 75 percent" subcontractors are shown in Tables Ia and Ib. The relative composition of the target group fairly-well represented the entire population with the predominance of firms being in the 1 - 1,000 employee range (84.6% compared to 79.1%). When compared to the other segregations, the distribution was relatively the same with the exception of the less than 10 percent subgroup.

Question 2 provided a common base in order to segregate contractors by amount of DOD business as a percentage of their total business. Question 3 followed up to determine the number of contractors within each category that derived greater than 75 percent of their business/sales in the role of a subcontractor to a prime DOD contractor. The resulting firms were the target group for the survey and the

analysis. Of the total pupulation, twenty six respondents (38.8%) were within the parameters.

TABLE Ia

Firm/Division Number of Employees

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Employees			
1 - 100	26	38.8	38.8
101 - 1,000	27	40.3	79.1
1,001 - 5,000	12	17.9	97.0
5,001 - 10,000	2	3.0	100.0
greater than 10,000	0	0	100.0
TOTAL	67	100.00	

Source: All tables were developed by the researcher unless otherwise noted.

TABLE Ib

Firms with Greater Than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Employees			
1 - 100	8	30.8	30.8
101 - 1,000	14	53.8	84.6
1,001 - 5,000	4	15.4	100.0
5,001 - 10,000	0	0	100.0
greater than 10,000	0	0	100.0
TOTAL	26	100.0	

Tables IIa and IIb depict the breakdown of the total population and greater than 75 percent subcontractors by total DOD business. Of the firms that fell within the target group, over half (53.8%) were also in the greater than 75 percent total DOD business category. This would tend to indicate a very high reliance of total business on DOD contracts. Of this reliance on DOD contracts, the greatest portion of the business is as a subcontractor.

Table III provides the distribution of subcontract percentages for the entire population. The percentage of contractors with more than 50 percent of their business as a subcontractor was slightly more than half (56.7%). However, the number of firms above 75 percent was more than double that between 50 to 74 percent as a subcontractor. When this was analyzed further by breaking the companies with greater than 75 percent total DOD business down into subcontractors, it revealed that 46.7 percent of these firms functioned in the role of a subcontractor greater than 75 percent of the time. The results of this analysis is shown in Table IV. The conclusion is that a company with a larger share of total DOD business is also more likely to be a large subcontractor.

Question four dealt with the total dollar business in the role of a DOD subcontractor. This question was posed to gain some insight concerning the magnitude of subcontractor dollar business compared to the entire population. Interestingly, there were no target firms with sales below

TABLE IIa

Total Business/Sales with DOD

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
greater than 10%	8	11.9	11.9
10 - 24%	7	10.4	22.4
25 - 49%	12	17.9	40.3
50 - 74%	10	14.9	55.2
greater than 75%	30	44.8	100.0
TOTAL	67	100.0	

TABLE IIb

Firms with Greater Than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
greater than 10%	1	3.8	3.8
10 - 24%	4	15.4	19.2
25 - 49%	7	26.9	46.2
50 - 74%	0	.0	46.2
greater than 75%	14	53.8	100.0
TOTAL	26	100.0	

$500,000. In fact, 53.8 percent were above the upper threshold of $5 million. Table V presents the composition for the total population and Table VI for the target group. Of the firms with less than ten percent DOD business as a subcontractor, two-thirds of their dollar business was below $100,000. This indicates that DOD business for firms in

TABLE III

DOD Business in the Role of a Subcontractor

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
greater than 10%	9	13.4	13.4
10 - 24%	8	11.9	25.4
25 - 49%	12	17.9	43.3
50 - 74%	12	17.9	61.2
greater than 75%	26	38.8	100.0
TOTAL	67	100.0	

TABLE IV

DOD Business in the Role of a Subcontractor

Firms with Greater than 75% Total DOD Business

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
greater than 10%	0	.0	.0
10 - 24%	4	13.3	13.3
25 - 49%	7	23.3	36.7
50 - 74%	5	16.7	53.3
greater than 75%	14	46.7	100.0
TOTAL	30	100.0	

this category would have little impact on their total operations and might therefore provide little impetus for improvement of capital expenditures.

TABLE V

Annual Dollar Sales as a DOD Subcontractor

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
greater than $100,000	9	13.4	13.4
$100,000 - $500,000	8	11.9	25.4
$500,000 - $2,000,000	12	17.9	43.3
$2,000,000 - $5,000,000	12	17.9	61.2
greater than $5,000,000	26	38.8	100.0
TOTAL	67	100.0	

TABLE VI

Annual Dollar Sales as a DOD Subcontractor

Firms with Greater than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
greater than $100,000	0	.0	.0
$100,000 - $500,000	0	.0	.0
$500,000 - $2,000,000	7	26.9	26.9
$2,000,000 - $5,000,000	5	19.2	46.2
greater than $5,000,000	14	53.8	100.0
TOTAL	26	100.0	

The next question involved was the type of manufacturing process used. This question was to ascertain the capital intensiveness of the firms surveyed and asked whether the firm was labor intensive, capital intensive, or balanced between capital and labor intensive. The information provided a basis to establish insight relevant to the

amount of benefit that would be derived from a productivity enhancing capital investment program. Also, the Standard Industrial Classification (SIC) code was solicited to ascertain the mix of businesses surveyed. A number of the firms were not aware of their SIC code and the compilation only shows those that responsed. Appendix G lists the SIC codes and their definition for the firms that responded.

The composition of the firms from the total population and the target group are displayed in Tables VII and VIII. As can be seen, the composition of the target group is comparable with the total population. As shown by Appendix F this fact did not prove to be true for all comparisons. The less than 10 percent subcontractor and total DOD business subgroup was markedly skewed toward the balance between labor and capital category, with none in the labor intensive category. The less than 75 percent but greater than 10 percent subcontractors, also shown in Appendix F tended to be less capital intensive (15.6%) and more labor intensive (46.9%). A significant note is that the greater than 75 percent total DOD business subgroup was also more reliant on labor intensive (43.3%) and significantly lower than the population in capital intensive (10%) processes. This would seem to indicate that firms with greater amounts of DOD business in relation to total business are less capital intensive. Is this fertile ground for productivity enhancements or do the firms require less capital equipment?

TABLE VII

Basic Manufacturing Process

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Capital Intensive	14	20.9	20.9
Labor Intensive	22	32.8	53.7
Balanced Between Labor and Capital	31	46.3	100.0
TOTAL	67	100.0	

TABLE VIII

Basic Manufacturing Process

Firms with Greater than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Capital Intensive	6	23.1	23.1
Labor Intensive	7	26.9	50.0
Balanced Between Labor & Capital	13	50.0	100.0
TOTAL	26	100.0	

In an article, Dr. Robert F. Williams cited a survey taken in 1981 by himself and Mr. Daniel Carr concerning contractor motivation theory which stated:

> Labor intensive firms had the most regard, balanced firms the second most, and capital intensive firms the least regard for providing a good product, company survival, developing a skilled work force, developing new capability, establishing a long-term business relationship, and improving cash flow. These industrial firms with larger Government business expressed somewhat more utility for survival, company growth, and improved cash flow than did other firms [28:51].

Based on this analysis it would seem that having a higher proportion of labor intensive firms with a high amount of Government business would be a desirable position from the Government's perspective.

The information derived from the SIC codes indicated that as expected, the firms represented a broad subcontractor base cross-section of the four prime contractors who provided the survey list. Of the 67 survey respondents, only 27 indicated knowledge of their SIC code. Of the 27 respondents only two SIC code categories had more than one respondent. These codes were, as shown in Appendix G, 3662 and 3679 which are; Radio and Television Transmitting, Signaling, and Detection Equipment; and, Electrical Components not elsewhere classified. Although less than half the total respondents knew their SIC code, the firms that did reflected the desired results: a complete aggregation across the subcontractor/supplier base.

Question seven asked what percentage of contracts received from a prime contractor are won on a competitive or noncompetitive basis. The question was posed to determine the relative amount of contracting that was accomplished in a competitive manner in the role of a subcontractor to a prime defense contractor. This turned out to be 78.5 percent competitive and 21.5 percent noncompetitive. When compared to a base such as the Navy's competition statistic for 1983 of 40 percent, the percentage appears more impressive.

The total population was very close with 77.3 percent competitive and 22.7 percent noncompetitive. On the surface, indications are that prime contractors, in fact, do a better job of obtaining competitive bids at the subcontractor level than is achieved by the ODD with prime contractors.

Characterization of an average member of the target group (DOD subcontractor greater than 75 percent of the time) would be: (1) a firm with 101-1,000 employees, (2) above 25 percent of their total business is with DOD, (3) sales as a DOD subcontractor greater than $2 million, (4) manufacturing process that is balanced between capital and labor, and (5) bids competitively on 78.5 percent of their business as a subcontractor to a prime contractor.

2. Prime Contractor Incentivization Concern

The questions under this topic, as the title implies, were posed to determine what efforts or programs prime contractors had used to provide incentives to subcontractors for capital investment or productivity enhancing initiatives. Also, if there were no incentives provided, what perception do subcontractors have of the prime contractors' concern for the subcontractors continued viability. Next, the basis on which capital investments are made was determined as an insight into possible means by which subcontractors would be motivated. The final question dealt with subcontractors' opinion concerning the need for prime contractors to provide capital investment incentives.

Questions 9, 10 and 11 dealt with efforts by the prime contractor to incentivize subcontractors.

Question 9: In the subcontract work you do for prime defense contractors is there effort on the primes' part to incentivize you to invest in productivity enhancing equipment?

Question 10: If the answer to question nine was positive, how effective are the prime contractors' efforts in motivating you to invest in new equipment/facilities?

a. not effective
b. somewhat effective
c. generally effective
d. very effective

Question 11: What methods do prime contractors use to incentivize your firm to make these productivity enhancing capital investments? (please be as specific as possible)

Of the 67 respondents, only 16 (23.9%) answered positively. A different ratio was received from the target group where eleven of the 26 (42.3%) respondents answered in the positive and accounted for 68.75 percent of the total positive answers. When correlated with the absolute number of positive responses (11) from the greater than 75 percent total DOD business group, indications are that the greater the percentage of DOD business, the greater the probability of receiving incentives from a prime contractor. This is further validated owing to the total negative response in all subgroups from the less than 10 percent firms. The remaining five firms with positive answers fell in the less than 75 percent but greater than 10 percent subgroups.

Question 10 was posed to assess the success of prime contractors' incentivization efforts for the firms answering positively on Question 9. The grouping of the responses tended toward the lower end of the scale for the total population and the target group. Tables IX and X illustrate the relationship. The conclusion is, of the firms that have received prime contractor incentivization, the efforts of the primes has met with limited success.

To gain a better insight into the incentivization methods used by prime contractors, Question 11 requested respondents to give a detailed explanation. Only 14 respondents answered the question. The responses were segregated by subgroup, as illustrated in Appendix E, to determine whether any patterns would emerge. Unfortunately, it appears that most of the respondents did not totally understand the question and provided sketchy information. Some of the more positive responses included; cooperative teams investigate processes for cost reduction, guaranteed rates of production, engineering consultations, purchase of equipment, commitment to long term orders, and shared savings. Once again the overriding theme was competition and the providing of a stable level of work by the prime contractor which induces capital investment at the subcontractor level.

Question 12 asked the subcontractors whether or not, in their opinion, prime contractors are concerned with their

continued viability as a defense subcontractor. Again, the explanatory responses were segregated into the six subgroups to assess patterns.

Of the total population, 64.2 percent of the firms perceived that primes were interested in their continued viability as a defense subcontractor. The target group exhibited an even stronger feeling with a 76.9 percent positive response. All subgroups, with the exception of the less than 10 percent, approximated or exceeded the population average. The 10 percent subgroup for subcontractors and total DOD business were well below the population average at 11.1 and 37.5 percent respectively. Table XI depicts the responses by subgroup.

The pervasive theme throughout the explanatory responses for positive answers was that prime contractors need a viable and competitive base to perform their own business and the only way to foster this climate is by being concerned with their subcontractor's perpetuity. A number of cases cited quality, on-time schedules, unique product, extensive testing and qualification for product and requisite technology as reasons primes are concerned with the subcontractors' continuation. Negative explanatory responses again dealt with competition and the fact that price was the only concern of the subcontractor. Others stated primes were only interested to the extent that the subcontractors affected their performance and ability to win contracts. For the most part,

TABLE IX

Incentivization Effectiveness

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Not Effective	0	.0	.0
Somewhat Effective	11	68.8	68.8
Generally Effective	4	25.0	93.8
Very Effective	1	6.2	100.0
TOTAL	16	100.0	

TABLE X

Incentivization Effectiveness

Firms with Greater than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Not Effective	0	.0	.0
Somewhat Effective	7	63.6	63.6
Generally Effective	3	27.3	90.9
Very Effective	1	9.1	100.0
TOTAL	11	100.0	

explanatory responses to the question were not provided when a respondent answered in the negative. This precluded a more complete analysis of these responses.

To ascertain what motivates capital investment at the subcontractor level, Question 13 was posed.

Question 13: On what basis do you make capital investments? Please elaborate (e.g., Return on Investment, Return on Equity)

TABLE XI

Question 12: Prime Contractor Interest in Continued Viability of Subcontractor

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Total Population			
Yes	43	64.2	64.2
No	24	35.8	100.0
TOTAL	67	100.0	
Greater than 75% Subcontractor			
Yes	20	76.9	76.9
No	6	23.1	100.0
TOTAL	26	100.0	
Less than 75% but Greater than 10% Subcontractor			
Yes	22	68.8	68.8
No	10	31.2	100.0
TOTAL	32	100.0	
Less than 10% Subcontractor			
Yes	1	11.1	11.1
No	8	88.9	100.0
TOTAL	9	100.0	
Greater than 75% Total DOD Business			
Yes	22	73.3	73.3
No	8	26.7	100.0
TOTAL	30	100.0	
Less than 75% but Greater than 10% Total DOD Business			
Yes	18	62.1	62.1
No	11	37.9	100.0
TOTAL	29	100.0	
Less than 10% Total DOD Business			
Yes	3	37.5	37.5
No	5	62.5	100.0
TOTAL	8	100.0	

The reason for this question was to see if any responses indicated a pervasive means that could be useful in structuring incentivization programs by prime contractors. Tables XII through XIV depict the responses received from the total population, target group, and greater than 75 percent total DOD business subgroup. All three groups cluster fairly close in their responses. Obviously, the return on investment (ROI) and "Other" group dominate. The explanatory portion of the question indicated that the Other group consisted mainly of the following: required to maintain competiveness, as needed only, affordability, investment tax credits, long term ROI, short term profit, increase production, acquire new capabilities. These are a few of the responses in the "Other" category, however, the pervasive response was "need". As shown in Tables XII through XIV, a number of firms gave more than one response which coupled ROI and other categories together. This indicated that more than one factor was considered before making a capital investment.

TABLE XII

Basis for Capital Investment

	Total Population		
Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Return on Investment	47	50.5	50.5
Return on Equity	3	3.2	53.8
Payback	4	4.3	58.1
Other	39	41.9	100.0
TOTAL	93	100.0	

TABLE XIII

Basis for Capital Investment

Firms with Greater than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Return on Investment	18	50.0	50.0
Return on Equity	1	2.8	52.8
Payback	3	8.3	61.1
Other	14	38.9	100.0
TOTAL	36	100.0	

TABLE XIV

Basis for Capital Investment

Firms with Greater than 75% Total DOD Business

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Return on Investment	20	46.5	46.5
Return on Equity	2	4.7	51.2
Payback	1	2.3	53.5
Other	20	46.5	100.0
TOTAL	43	100.0	

The final question, Question 18, asked whether, in the subcontractors' opinion, there is a need for prime contractors to provide capital investment incentives to them.

The total population reflected an absolute frequency of 37 positive and 30 negative responses for a relative frequency of 55.2 and 44.8 percent. The target group closely approximated the total population with an exact 50-50 split between positive and negative. The surprising responses

were in the greater than 75% total DOD business subgroup where 70 percent felt a need for prime contractors to incentivize subcontractors. Although not germane to the present study it is interesting to note, the less than ten percent subcontractor and total DOD business subgroup resulted in a 77.8 and 62.5 percent negative response. Table XV illustrates the responses by subgroup.

Explanatory notes were segregated by subgroup for analysis. Unfortunately, for the most part, if a negative response was given there was no accompanying explanation. Therefore, Question 18, in Appendix E is biased with almost all positive explanations. Of the positive responses received, there was a dichotomy of reasons and degrees to which incentivization should take place. However, the most pervasive theme was that if there was a guarantee of steady work by a prime contractor, then productivity enhancing capital investments would be accomplished. This equates to stability. Another relatively common response to the question related to quality levels together with low profit margins on Government contracts which inhibited capital investment. Taking into account the almost even distribution of responses, it appears that there is no consensus of opinion at the subcontractor level on which to base a conclusion concerning whether or not prime contractors should incentivize capital investment.

TABLE XV

Question 18: Subcontractors Perception of Need for Prime Contractors to Provide Capital Investment Incentives

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Total Population			
Yes	37	55.2	55.2
No	30	44.8	100.0
TOTAL	67	100.0	
Greater than 75% Subcontractor			
Yes	13	50.0	50.0
No	13	50.0	100.0
TOTAL	26	100.0	
Less than 75% but Greater than 10% Subcontractor			
Yes	22	68.8	68.8
No	10	31.2	100.0
TOTAL	32	100.0	
Less than 10% Subcontractor			
Yes	2	22.2	22.2
No	7	77.8	100.0
TOTAL	9	100.0	
Greater than 75% Total DOD Business			
Yes	21	70.0	70.0
No	9	30.0	100.0
TOTAL	30	100.0	
Less than 75% but Greater than 10% Total DOD Business			
Yes	13	44.8	44.8
No	16	55.2	100.0
TOTAL	29	100.0	
Less than 10% Total DOD Business			
Yes	3	37.5	37.5
No	5	62.5	100.0
TOTAL	8	100.0	

In summary, a subcontractor in the target group has a 42.3 percent chance that the prime has provided incentivization to some degree with limited success. Continued viability of the subcontractor is a concern of the prime contractor. Capital investments are made based on ROI and some other consideration, most likely "need". Whether or not incentivizations should be provided by the prime contractor is inconclusive based, on this analysis.

3. DOD Incentivization Program Awareness

Questions 8 and 14 relate to current DOD efforts being used to motivate contractors to invest in productivity enhancing capital equipment. The intent was to ascertain whether or not any of the subcontractors had participated in the use of these incentives and their impact. Explanatory responses were again segregated by subgroup as a means of identifying patterns.

Question 8: Is your company aware of the DOD profit policy and specifically the capital investment incentivization portion of the policy? (If yes, what has been the impact on your firm?)

Question 14: Is your firm familiar with the concept and implementation of productivity enhancement capital investment programs such as IMIP, MANTECH, or TECHMOD. (If yes, in what manner has one or more of these programs affected your firm?)

Approximately one-third (34.3%) of the population were aware of the capital incentivization portion of the profit policy included in the Weighted Guidelines (WGL). The target group was slightly higher at a relative frequency

of 38.5 percent. The most positive subgroup was the greater than 75 percent total DOD business with a relative frequency of 46.7 percent. The subgroup having the least knowledge of the profit policy incentives was the less than 10 percent subcontractor and total DOD business, with a relative frequency of 11.1 and 12.5 percent respectively.

Of the firms with knowledge of the policy, the explanatory responses were overwhelmingly negative and there was no distinguishing demarcation between subgroups. Examples of the responses included; (1) no significant impact; (2) nothing positive; (3) very little impact; (4) negligible impact; (5) small impact, because the policy does not identify significant amounts of capital; (6) WGL is of little help; (7) little, because substantial investment in machinery and test equipment would be needed to make any significant impact; and, (8) very little, because in all profit policies to date the "bottom line" price becomes the driver. Further examples of the same theme are listed in Appendix E.

Awareness of productivity enhancing capital investment programs such as IMIP, TECHMOD and MANTECH for the population was 28.4 percent. The target group was more aware of these programs, with a relative frequency of 38.5 percent. The subgroup having the greatest knowledge of the programs was the greater than 75% total DOD business, with a relative

frequency of 40 percent. As would be expected, the less than 10 percent subgroup indicated complete ignorance of the programs.

Of the firms responding positively to Question 14, none expressed an impact to date in the explanatory notes. In fact, only one firm had implemented any of the programs and that firm was in the early stages without any measurable affect to date. Another frim had recently agreed to participate in the General Dynamics/Fort Worth program. A number of the firms expressed interest and indicated that a working or study group had been established to assess the programs. One firm took an agressively negative attitude toward the programs stating the approval process and paperwork necessary coupled with the expense made it simpler and faster to do without Government involvement.

Considering the newness of the programs and the recent impetus for their implementation at the subcontractor level, the lack of awareness is understandable. The major subcontractor productivity incentivization emphasis to date has been the Industrial Technology Modernization program instituted on the F-16 program at General Dynamics/Forth Worth. Both firms indicating existing or pending programs were part of the F-16 effort.

In summary, 38.5 percent of the target firms were aware of the DOD profit policy capital investment incentivization efforts. Of these firms, it was found that

relatively little impact has been made by the policy. Awareness of recent capital investment programs was also 38.5 percent, with no affect on any of the target group to date.

4. DOD Business Profitability

Current literature, as referenced in Chapter II, indicates that the Defense Industrial Base is eroding. One of the tenets tendered for this erosion is the migration of firms from defense business to more lucrative commercial business. The intent of Question 16 and corresponding explanatory responses requested by Question 17 was to test the supposition that commercial business is more profitable than defense business. To preclude any confusion concerning the meaning of profitability, Question 15 was posed to ensure that the firms' own definition of profitability was used in responding to Question 16.

Question 15: On what basis do you measure profitability? (e.g., percent of sales, return on equity, return on assets, etc.)

Question 16: Does Government defense business provide the same profitability, using your measure of profitability, as does your commercial business?

Question 17: If the answer to Question 16 was negative, please explain.

A number of firms responded to Question 15 with more than one answer. The responses which most firms used twice were, Return on Assets (ROA) and Percent of Sales. These two counted for approximately 80 percent of the total

population and 83 percent of the target group. All other subgroups, with the exception of the less than 10 percent subgroup, closely approximated the population's relative frequency. The less than 10 percent subcontractor and total DOD business subgroups were highly concentrated in the Percent of Sales category with 81.8 and 70 percent respectively. The comparison of less than 10 percent firms with the target group and greater than 75 percent total DOD business tends to corroborate the premise, that if profits are not commensurate with risk, the prudent businessmen will attempt to maximize profitability. This maximization is attained through the use of older or less expensive capital equipment which allows the ROA to provide a suitable profitability [13:34]. Tables XVI and XVII display the total population and target group outcome. Once again, the purpose for the question was to clarify a firm's definition of profitability prior to posing Question 16.

Response to Question 16 proved to be anything but conclusive on a broad basis. As can be seen in Table XVIII, which delineates the responses in each subgroup, there is an almost even split concerning the profitability of Government versus commercial business. This fact does not preclude the presumption that there could be a migration to commercial business of enough firms within the 50 percent category to cause an erosion, especially in critical components, of the defense industrial base. The indication is that, in

TABLE XVI

Basis for Measurement of Profitability

Total Population

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Return on Investment	4	4.3	4.3
Return on Assets	22	23.7	28.0
Percent of Sales	52	55.9	83.9
Return on Equity	11	11.8	95.7
Other	4	4.3	100.0
TOTAL	93	100.0	

TABLE XVII

Basis for Measurement of Profitability

Firms with Greater than 75% DOD Subcontracts

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Return on Investment	2	5.6	5.6
Return on Assets	11	30.6	36.1
Percent of Sales	19	52.8	88.9
Return on Equity	2	5.6	94.4
Other	2	5.6	100.0
TOTAL	36	100.0	

general, depending on the product of the firm, defense business is as profitable as commercial business.

The researcher's analysis of Question 17 explanatory responses by subgroup did not reveal any major differences between groups. A myriad of reasons for commercial business being more profitable were cited with the four most oft repeated being: (1) Government profit policy limitations on

TABLE XVIII

Question 16: Government Versus Commercial Profitability

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Total Population			
Yes	31	46.3	46.3
No	36	53.7	100.0
TOTAL	67	100.0	
Greater than 75% Subcontractor			
Yes	13	50.0	50.0
No	13	50.0	100.0
TOTAL	26	100.0	
Less than 75% but Greater than 10% Subcontractor			
Yes	14	43.8	43.8
No	18	56.3	100.0
TOTAL	32	100.0	
Less than 10% Subcontractor			
Yes	4	44.4	44.4
No	5	55.6	100.0
TOTAL	9	100.0	
Greater than 75% Total DOD Business			
Yes	16	53.3	53.3
No	14	46.7	100.0
TOTAL	30	100.0	
Less than 75% but Greater than 10% Total DOD Business			
Yes	10	34.5	34.5
No	19	65.5	100.0
TOTAL	29	100.0	
Less than 10% Total DOD Business			
Yes	5	62.5	62.5
No	3	37.5	100.0
TOTAL	8	100.0	

profit regardless of risk; (2) Extra overhead costs associated with Government business; (3) Non-recognition of the cost of money; and (4) Disallowance of costs. These responses are typical of reasons given throughout past and current literature concerning defense business profitability. However, the small subcontractors, who are not necessarily receiving progress payments as is the prime, cannot afford the extra overhead and cost of money associated with defense business. These costs are reflected in their loss of profit [4:148].

Within the profitability category, the target group can be typified as using more than one means of defining profitability, the most common being Percent of Sales and ROA. The use of ROA in comparison to the less than 10 percent subgroup is significant owing to the relationship of profitability based on assets to the amount of assets employed. The target group was a perfect split relating to profitability of Government versus commercial business. Reasons for lower profitability ran the gamut, but did coalesce into the four distinct areas identified above.

D. DOD INTERVIEW RESPONSES

Interviews of DOD personnel involved in productivity enhancement and profit policy were conducted to provide insight into the current DOD perspective. The amount of effort presently being expended to assess the current profit policy and to provide a means to incentivize productivity

enhancing capital investment is considerable. At present, IMIP is receiving a great deal of emphasis and is undergoing a trial phase [22]. A Profit Policy review entitled Defense Financial and Investment Review (DFAIR) is currently underway and will report out in early spring 1985. These efforts are a direct result of the Defense Acquisition Improvement Program initiatives [2:21].

Once again, to gain information concerning the present Profit Policy, the question of whether or not the current policy was and is a motivator for capital investment was asked. The overall consensus was that the policy does not incentivize capital investment and cannot as long as it is cost-based. Some of the interviewees indicated that in conjunction with other programs, Profit Policy could assist in capital investment incentivization. The outcome of this question was expected, and reflects current information concerning Profit Policy usage in concert with other incentivization programs in a systematic manner [21:8].

The question of whether prime contractors are concerned with motivating subcontractors to make capital investments to improve productivity received mixed responses. The majority responded in the negative. However, one of the interviewees felt that with incentivization from the Government through the use of award fees, primes would be more than willing to assist subcontractros. Another interviewee thought that primes were concerned with some of their subcontractors but lacked a vehicle by which to incentivize them.

The general opinion concerning the decline or erosion of the subcontractor base was surprising. Two respondents had no opinion, while others thought that in isolated instances there was a degredation. Other interviewees thought the number of subcontractors had declined but not the capacity. One interviewee felt that the problem existed in isolated industries, but was caused more, in these industries, by Occupational Safety and Health Administration and Environmental Protection Agency. The overall consensus seemed to be that there was little, if any, erosion of the subcontractor defense industrial base.

The area addressed next solicited opinions as to whether the DOD should be concerned with motivating subcontractors to make productivity enhancing capital investments and, if so, what methods should be used. All interviewees agreed that DOD should be concerned to some degree with the motivation of subcontractors. The degree was an issue between the interviewees depending on whether the DOD expected prime contractors to maintain mobilization capacity. If the mobilization factor was a primary concern, then the DOD must do more than let the market forces prevail. Some suggestions included; motivate primes to assist subcontractors through the use of incentive and award fee contracts; use of modernization incentive programs such as Industrial Technology Modernization through the prime contractor; more positive ways for prime contractors to flow-down progress

payments to subcontractors; and, inclusion of subcontractor base considerations in the program acquisition strategy. The overall synthesis of the different interviewees on the topic seemed to be that market forces and few rudder orders from DOD would maintain an adequate subcontractor/supplier base. However, if surge and mobilization capacity were included in the scenario, then positive direct DOD intervention was required.

In order to be aware of as current information as possible, the question concerning initiatives and ongoing programs to incentivize subcontractors was broached. The interviewees were not aware of any new initiatives besides the IMIP type arrangements which are now being targeted at the subcontractor level. A few of the newer IMIP programs, similiar to General Dynamics/Fort Worth ITM program, are being started at the subcontractor level through General Dynamics/Morton Thiokol and Grumman Aerospace [25:10]. It is expected the furtherance of the flowdown of these programs to subcontractors would provide a different response to Question 14 of the questionnaire, if asked, in a year or two.

The final structured question posed to the interviewees dealt with their view of the defense industrial base and their thoughts on what efforts should be accomplished to improve the base. The consensus of opinions favored stabilization above all other efforts. Whether the stabilization came through incentivization programs, multi-year programs

or by other means, it is the key to increased productivity and lower overall systems price. Other specifics included increased emphasis on productivity in acquisition strategy, some advance buying for surge capacity, and fostering a health cooperative attitude between industry and DOD.

E. SUMMARY

The main focus of this chapter has been to reflect the major opinions of prime contractor, subcontractor, and DOD personnel regarding their perceptions of capital investment incentivization flowdown to subcontractors in the defense industrial base. This was accomplished by interviewing prime contractor personnel, examining the responses made by subcontractors to a questionnaire, and interviewing knowledgeable DOD personnel. The interviews sought to elicit information and opinions from prime contractor and DOD personnel concerning the flowdown of incentives to subcontractors and the necessity thereof. The questionnaire sought to express the subcontractor opinion on various aspects of capital investment, profitability, and incentivization efforts by prime contractors. The responses to each of the interview and survey questions, where applicable, were summarized in tables or in narrative form.

To capsulize, prime contractors' responses indicated: (1) a lack of concern and perceived lack of need for incentivizing their subcontractors to make productivity enhancing capital investments; (2) competition for the most part was

all the incentive needed at the subcontractor level; (3) made no effort to flowdown Profit Policy capital investment incentives to subcontractors; (4) no structured plan or method on their part to motivate subcontractors; (5) felt there was an erosion of the subcontractor base due to more sole sources, however, there are enough subcontractors to provide current production needs; (6) vertical integration was not a predominant means of increasing revenues; (7) there are no long range commitments by the primes to improve or uphold their subcontractor base; and (8) did not think that DOD policy requiring a flowdown of capital incentives was needed or desirable.

The average subcontractor within the target group is a firm typified by (1) 101-1000 employees; (2) greater than 25 percent of their business is with DOD; (3) sales as a DOD subcontractor is greater than $2 million; (4) manufacturing rpocess is balanced between capital and labor intensive; (5) bids competitively on 78.5 percent of their business as a subcontractor to a prime contractor; (6) has a 42.3 percent chance that a prime contractor has provided incentivization to some degree with limited success; (7) continued viability is a concern of their prime contractors; (8) capital investment is based on ROI and some other consideration, most likely "need"; (9) unsure whether or not the prime should incentivize them to make productivity enhancing capital investments; (10) has a 38.5 percent chance of being

aware of DOD profit policy and the policy has had little if any impact on the firm; (11) has a 38.5 percent chance of being aware of other DOD capital investment programs, with no affect to date; (12) use more than one means of defining profitability, usually as percent of sales and ROA: (13) is split 50-50 between Government and commercial concerning profitability.

The summary of responses provided by DOD personnel interviewed included; (1) did not think present Profit Policy incentivized capital investment; (2) majority felt that prime contractors were not concerned with incentivizing their subcontractors; (3) thought that the overall there was little, if any, erosion of the subcontractor industrial base; (4) felt that DOD should be concerned to some degree with the motivation of subcontractors, the degree depending on the level of mobilization capacity considered necessary; (5) indicated capital investment programs were now being targeted at the subcontractor level; and (6) thought that the key to increased productivity and lower systems prices was through stabilization of the acquisition process.

The next chapter will contain the principal findings, conclusions, recommendations, suggestions for further research, and answers to the specific research questions.

V. PRINCIPAL FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A. PRINCIPAL FINDINGS AND CONCLUSIONS

The objective of this study was to examine the methods by which prime contractors motivate subcontractors to make productivity enhancing capital investments. The principal findings and conclusions were derived from opinions received during personal interviews and the subcontractor questionnaire response data.

1. Identification of "true" defense subcontractors is extremely difficult. There is no known definition used by DOD or prime contractors that characterizes a subcontractor. In fact, a large volume subcontractor may also be a large volume prime contractor. The identification and definitization of what constitutes a subcontractor who should be targeted for motivational efforts, and is segregated from current DOD efforts at the prime level, presents an almost impossible task. Although not a specific research question, it became obvious throughout the research effort that a common usage of the term "subcontractor" was not used. This fact was borne out during the entire evolution of the research. Lacking a precise definition, or at least a range, of subcontractors who should be targeted for incentivization and assistance, it is impossible to formulate policies to address their problems as it relates to the defense industrial base. In other words, if we do not know what the "animal" looks like how can we catch it and cure it?

2. Prime contractors are not interested in incentivizing subcontractors to make productivity enhancing capital investments. In general, prime contractors interviewed, subcontractors responding to the questionnaire, and DOD personnel interviewed indicated that little, if any subcontractor capital investment incentivization effort is being effected by prime contractors. Competition was seen as the driving force in providing a viable subcontractor base. This face was verified by subcontractor responses concerning the amount of contracts received on a competitive basis. Additionally,

the low positive response rate relative to prime contractor incentivization for investment indicated a lack of effort on the primes' part. However, it must be noted, that the firms who were identified as "true" subcontractors for the purpose of the analysis, did respond more favorably. It appears that prime contractors are more concerned with the productivity of subcontractors with a greater portion of their business in the role of a subcontractor.

3. There is no structured or unstructured methodology by which prime contractors motivate subcontractors to make productivity enhancing capital investments. Of the four major prime contractors interviewed, there was no plan for incentivizing subcontractors at all. This was corroborated by the responses from the subcontractors and interview data from DOD personnel. Subcontractors perceived an interest from the prime contractor only so far as they were concerned with the competition available at the subcontractor level. This was also supported by the prime contractors who stated, they would provide guidance and assistance in order to provide a second source when required. Again the forces of competition are expected to, and seem to, provide a sufficient subcontractor base.

4. Perceptions by prime contractor interviewees and DOD interviewees were inconclusive relative to erosion of the subcontractor base. As noted in Chapter IV, interviewees indicated, for the most part, there was an erosion, however, it was not pervasive or debilitating. This may be a short-sighted view concerned only with the present and discounts the capacity and productivity necessary for surge and mobilization. As one interviewee stated "I'm not sure the subcontractor base is unhealthy for a peacetime environment.

5. The flowdown and impact of profit policy and current capital investment incentivization programs has been negligible. Of the subcontractors who professed knowledge of the profit policy and associated incentives, the responses were overwhelmingly negative. This is not surprising considering the main effort has been toward incentivizing prime contractors and what is targeted for prime contractors will not necessarily work at the subcontractor level. Current literature and the informal survey taken by the author indicate the policy has not been effective at the prime level, therefore, has little chance of being effective at the subcontractor level. Even fewer subcontractors were aware of the current capital investment incentives (IMIP, TECHMOD, ITM and MANTECH) and none had

experienced an impact on their operations to date. In all fairness, it must be pointed out that recent emphasis on the subcontractor level of these programs is in the infancy stage and has had little time to be effective or the impact evaluated.

6. Stability of workload would provide the most incentive for capital investment at the subcontractor level. Although not a new or novel conclusion, subcontractor explanatory responses, as noted in Chapter IV, to Question 18 indicated a steady work level would provide the incentivization necessary to make capital investments.

7. Depending on the product, defense business is as profitable as commercial business at the subcontractor level. This conclusion is based on the almost perfect split of respondents from the target group and all other groups. This conclusion does not agree with nor does it totally disagree with current literature. As noted earlier, the contention is that the subcontractor base is eroding owing to the movement of subcontractors from defense business to commercial business. Results of the survey do not indicate this is not happening, rather, that on the average, defense business is as profitable as commercial business. Whether or not there is a migration from defense business, owing to defense business versus commercial business profitability, cannot be determined from the survey.

B. RECOMMENDATIONS

1. The DOD should be concerned with incentivizing capital investment at the subcontractor level. As noted earlier, 50 - 60 percent of the dollar value of contracts goes to subcontractors and represents a sizable sum considering the current DOD procurement budget. If, as is stated policy, DOD is concerned with incentivizing productivity enhancing capital investments, then logic dictates that efforts and policies to ensure a flowdown to subcontractors be effected.

2. DOD should define what it considers the subcontractor base and the surge/mobilization capacity actually desired. At present, the expressed concern for surge/mobilization and erosion of capabilities at the subcontractor is given "lip service". However, until the nebulous subcontractor who is the target for incentivization is defined, any efforts will be ill-founded and ineffective. The definitization efforts should be on an industry basis. As exhibited by the subcontractor

questionnaire responses, not all firms feel that incentivization efforts are necessary. It is this researcher's opinion that subcontractors should be segregated by industry to identify the areas that need/require capital investment to provide a healthy base. Being averse to increasing the administrative burdens placed on defense contractors, some type of reporting system will be necessary to quantify the defined subcontractors.

3. DOD should become involved in determining ways in which the defined subcontractors can be incentivized to make productivity enhancing capital investments. As was demonstrated in the prime contractor interviews and subcontractor questionnaire responses, prime contractors are doing little to incentivize subcontractors. This should not be a shock to DOD since most incentivization efforts and concern for industrial base erosion to date has been directed at prime contractors. What impetus, other than maintaining competition for immediate requirements, does the prime contractor have for engendering increased capacity at the subcontractor level? Without some kind of incentivization for concern at the prime level and vehicles by which capital investment incentives can be passed to the subcontractor, little can be expected. Some possible vehicles to provide the flowdown are in place. These include IMIP objectives for subcontractors and use of Cost-Plus-Award-Fee and Incentive-Fee contracts which require prime contractor incentivization efforts.

C. RECOMMENDATIONS FOR FURTHER RESEARCH

It is recommended that further research be conducted in the following areas:

1. Determining the parameters that define a defense subcontractor. Additionally, the research should include identification of subcontractor groups by industry and possibly geographic location which require targeting for incentivization efforts. Industries with sufficient (e.g., capacity large enough to fulfill surge and mobilization requirements) subcontractor capacity and competition would not be addressed.

2. Methodologies that would best be suitable for capital investment motivation of subcontractors. Recognition that tailoring of programs to address particular capital investment needs, rather than a uniform or "shotgun" approach, would be required.

3. The extent of backward integration by prime contractors as a contributing cause to loss of subcontractors from the defense industrial base. Information derived from the research indicated that vertical integration was not common unless capabilities did not exist at the subcontractor level. However, the sample was extremely small and therefore inconclusive.

D. ANSWERS TO RESEARCH QUESTIONS

As a synopsis of the information presented the following is a reiteration of the primary and subsidiary research questions and their results.

Primary Research Question

Question: What methods, do prime contractors utilize to incentivize subcontractors to invest in productivity enhancing facility improvements?

Answer: The research did not reveal any structured method of subcontractor incentivization efforts being made by prime contractors. The only methods discovered were based on maintaining a stable source of supply or correcting the quality of subcontractor supplied materials/products.

Subsidiary Research Questions

Question: What have been the results of the DOD profit policy to date in incentivizing prime contractors to make capital investments?

Answer: Of the four prime contractors interviewed, other prime contractors interviewed over the past year and the DOD personnel interviewed, the concensus of opinion was that the profit policy has had little impact on capital investment decisions. One of the prime contractors interviewed provided a totally diverse perspective. They stated that profit policy coupled with CAS 414 was a major driving force in their capital investment decisions. This firm appears to be the exception rather than the rule and in the researcher's opinion should be discounted.

Question: Are prime contractors concerned with improving the productivity of their subcontractors?

Answer: The research indicated that subcontractor productivity was not a concern of the prime contractor. The general concensus appeared to rely on competition to provide the necessary productivity.

Question: Is there a flowdown of the profit policy incentives to the subcontractor?

Answer: None of the prime contractors interviewed attempted to flowdown profit policy incentives to their subcontractors. It appears that almost the reverse is happening owing to the amount of firm-fixed-price contracts between prime and subcontractors when the prime contractor has a cost-type contract with DOD.

Question: How do defense subcontractors view the present profit policy and do they perceive any impact on their organizations?

Answer: Of the firms that were aware of DOD profit policy, the responses were overwhelmingly negative. There was little perceived positive impact regarding incentivization of capital investment efforts of the profit policy.

Question: On what basis are capital investment decisions made at the defense subcontractor level?

Answer: Not surprisingly most subcontractors make investment decisions based on Return on Investment. However, surprisingly the "Other" category, which ran the gamut from maintaining a competitive edge to need, was used to make capital investment decisions. It became clear, based on the number of dual responses, that more than one criteria was considered prior to making a productivity enhancing capital investment.

Question: What impact have programs for improvement of capital investment, other than DOD profit policy, had on subcontractors?

Answer: Of the subcontractors aware of programs such as IMIP, MANTECH, TECHMOD, and ITM none had experienced any impact to date. Those enrolled in the programs felt that positive results would be achieved.

Question: How effective are prime contractors' programs for incentivizing subcontractors to make capital investments and are these programs applicable for DOD use?

Answer: This question became a moot point when the prime research question and subsidiary question concerning prime contractor methods and concern for motivating subcontractors revealed little to no concern or method for motivating subcontractors.

Question: What are the characteristics of the defense industrial base at the subcontractor level?

Answer: The research revealed a dichotomy of characteristics which cannot be summarized into a neat and orderly package. It did become apparent that each industry is independent and different, requiring customized incentivization efforts.

Question: Should DOD have a flowdown policy for incentivizing subcontractors through prime contractors?

Answer: The information indicated to the researcher that an overall DOD program should be instituted with finite delineations in the acquisition strategy of major systems to ensure adequate surge and mobilization capacity at the subcontractor level. The only vehicle to effect this would be through the prime contractor owing to privity of contract ramifications.

APPENDIX A

PRIME CONTRACTOR INTERVIEW QUESTIONS

1. Is improving the productivity of your subcontractors a concern? If so why, and how does that concern drive your procurement decisions. If not, why not?

2. Would you say there is a flowdown of the profit policy investment incentives to the subcontractor level? If so, how? If not, why not? Is it policy? Lack of interest? Lack of need?

3. What methods does your company use to motivate your subcontractors to make productivity enhancing capital investments?

4. As a prime contractor how do you view the present profit policy and does it have any impact on your organization?

5. Are capital investments made as a result of the profit policy or are other criterion used? If other criterion, what?

6. What impact have programs such as MANTECH, TECHMOD, and IMIP had on productivity enhancing capital investments at the prime contractor level? Do you perceive any effect on subcontractors?

7. One keeps hearing of the eroding Defense Industrial Base, especially at the subcontractor level. How would you define the industrial base? Do you think the base is eroding? How would you typify the erosion? Down to what level are you concerned with the erosion (e.g., 1st tier, 2nd tier)?

8. Does your company have any long range commitments to uphold the subcontractor industrial base? If so what are they?

9. Do you think that there should be a specific policy within DOD to require a flowdown of capital investment incentivization from the prime to the subcontractor?

10. As an overview statement, what is your perception of the health of the subcontractor industrial base?

APPENDIX B

SUBCONTRACTOR QUESTIONNAIRE

1. How large is your firm/division in terms of number of employees?

___ a. 1 - 100
___ b. 101 - 1,000
___ c. 1,001 - 5,000
___ d. 5,001 - 10,000
___ e. greater than 10,000

2. What percent of your total business (sales) is for Government defense contracts? (include business both as a prime and subcontractor)

___ a. less than 10%
___ b. 10 - 24%
___ c. 25 - 49%
___ d. 50 - 74%
___ e. greater than 75%

3. What percent of your Government defense business, as indicated in question 2, is in the role of a subcontractor to a prime defense contractor?

___ a. less than 10%
___ b. 10 - 24%
___ c. 25 - 49%
___ d. 50 - 74%
___ e. greater than 75%

4. What is the approximate annual dollar sales volume of your Government defense business as a subcontractor to a prime defense contractor?

___ a. less than $100,000
___ b. $100,000 - $500,000
___ c. $500,000 - $2,000,000
___ d. $2,000,000 - $5,000,000
___ e. greater than $5,000,000

5. The basic manufacturing process of your firm can be described as:

___ a. capital intensive (e.g., machines perform a majority of the process)
___ b. labor intensive (e.g., labor performs a majority of the process)
___ c. balanced between labor and capital

6. What is your standard industrial classification (SIC) code?

_____

7. What percent of the contracts received from prime defense contractors are won on a competitive and noncompetive basis?

Competitive _____% Noncompetitive _____%

8. Is your company aware of the DOD profit policy and specifically the capital investment incentivization portion of the policy?

Yes _____ No _____

If yes, what has been the impact on your firm? (use reverse if more space is needed)

9. In the subcontract work you do for prime defense contractors is there any effort on the primes' part to incentivize you to invest in productivity enhancing equipment? (if the answer is negative go to question 12)

Yes _____ No _____

10. If the answer to question nine was positive, how effective are the prime contractors' efforts in motivating you to invest in new equipment/facilities?

___ a. not effective
___ b. somewhat effective
___ c. generally effective
___ d. very effective

11. What methods do prime contractors' use to incentivize your firm to make these productivity enhancing capital investments? (please be as specific as possible)

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor?

Yes _____ No _____
(please explain your response)

13. On what basis do you make capital investments? Please elaborate (e.g., Return on Investment, Return on Equity).

14. Is your firm familiar with the concept and implementation of productivity enhancement capital investment programs such as the Industrial Modernization Incentive Program (IMIP), Manufacturing Technology (MANTECH) program, or Technology Modernization (TECHMOD) program?

Yes _____ No _____
(If yes, in what manner has one or more of these programs affected your firm?)

15. On what basis do you measure profitability? (e.g., percent of sale, return on equity, return on assets, etc.)

16. Does Government defense business provide the same profitability, using your measure of profitability, as does your commercial business?

Yes _____ No _____

17. If the answer to question 16 was negative, please explain.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investments? (please explain)

Yes _____ No _____

Name of contact point: _____

Phone number: _____

APPENDIX C

SUBCONTRACTOR QUESTIONNAIRE MAILING LIST

FRYER KNOWLES CO.
205 SOUTH DAWSON
SEATTLE, WA.

NORTHWEST TANK SERVICE
1500 AIRPORT WAY SOUTH
SEATTLE, WA.

FRASER BOILER CO.
4104 WEST MARGINAL WAY SOUTH
SEATTLE, WA.

MORTRUDE FLOOR CO.
8701 15TH WEST
SEATTLE, WA.

SEATTLE FLIGHT CO.
7001 PERIMETER ROAD
SEATTLE, WA.

BRANOM INSTRUMENTS CO.
5500 FOURTH STREET
SEATTLE, WA.

LAUCKS CO.
940 SOUTH HARNEY
SEATTLE, WA.

PSER CO.
3433 AIRPORT WAY SOUTH
SEATTLE, WA.

EVERGREEN MOBILE
22433 S.E. 56TH ST.
ISSAQUAH, WA.

SUPERMAINTENANCE
10518 N.E. 68TH
BLDG. B
BELLEVUE, WA.

ALFA-LAVAL, INC.
OIL PURIFICATION DIVISION
350 DUTCHESS TURNPIKE
POUGHKEEPSIE, NY 12602

DOVER CORPORATION
BLACKMER PUMP DIVISION
1809 CENTURY AVE. S.W.
GRAND RAPIDS, MI 49509

CARRIER-TRANISCOLD CO.
A DIVISION OF CARRIER GROUP
P.O. BOX 4805
SYRACUSE, NY 13221

COLT INDUSTRIES OPERATION CORP.
FAIRBANKS-MORSE ENGINE DIV.
701 LAWTON AVE.
BELOIT, WI 53511

C-E MARINE POWER SYSTEMS
COMBUSTION ENGINEERING, INC.
WINDSOR, CONNECTICUT 06095

INTERNATIONAL SWITCHBOARD CORP.
P.O. BOX 40425
7514 ALABONSON ROAD
HOUSTON, TX 77088

LAKESHORE, INC.
P.O. BOX 809
IRON MOUNTAIN, MI 49801

PHILADELPHIA GEAR CORP.
181 SOUTH GULPH ROAD
KING OF PRUSSIA, PA 19406

STEWART-WARNER ELECTRONICS
DIV OF STEWART WARNER CORP.
1300 N. KOSTNER
CHICAGO, IL 60651

TRANSAMERICA DELAVAL, INC.
IMO PUMP DIVISION
P.O. BOX 3187
BELLEVUE, WA 98009

UNIDYNAMICS/ST. LOUIS, INC.
472 PAUL AVENUE
ST. LOUIS, MO 63135

ABEX CORP
AEROSPACE DIVISION
2850 SKY WAY DRIVE
SANTA MARIA, CA 93455

AEROFLEX LABORATORIES
TORQUE MOTOR PRODUCTS DIV.
35 S. SERVICE ROAD
PLAINVIEW, NY 11803

AEROJET GENERAL CORP.
AEROJET STRATEGIC PROPULSION CO.
P.O. BOX 15699C
SACRAMENTO, CA 95813

ALL AMERICAN ENGINEERING CO.
725 DAWSON DR.
NEWARK, DE 19713

AMERICAN SCIENCE & ENGINEERING INC.
FORT WASHINGTON
CAMBRIDGE, MA 02139

APPLIED SOLAR ENERGY CORP.
15251 EAST DON JULIAN ROAD
CITY OF INDUSTRY, CA 91746

ARGO SYSTEMS INC.
884 HERMOSA
SUNNYVALE, CA 94086

ATLANTIC RESEARCH CORP.
5390 CHEROKEE AVENUE
ALEXANDRIA, VA 22314

ATLANTIC RESEARCH CORPORATION
PINE RIDGE FACILITY
7511 WELLINGTON RD.
GAINSVILLE, VA 22065

AVNET INC.
HAMILTON/AVNET ELECTRONICS DIV.
1175 BORDEAUX DR.
SUNNYVALE, CA 94086

AYDIN CORP.
FRIENDS LANE AND PENNS TRAIL
P.O. BOX 328
NEWTON, PA 18940

BATTELLE MEMORIAL INSTITUTE
PACIFIC NORTHWEST LABORATORIES
BATTELLE BOULEVARD
RICHLAND, WA 99352

BENDIX CORP.
GUIDANCE SYSTEMS DIV.
ROUTE 46
TETERBORO, NJ 07608

CALSPAN CORP.
ADVANCED TECHNOLOGY CENTER
P.O. BOX 400
BUFFALO, NY 14225

CENTEL COMMUNICATIONS CO.
CENTEL BUSINESS SYSTEMS
5501 N. LAMAR
AUSTIN, TX 78751

CHROMATICS INC
2558 MOUNTAIN INDUSTRIAL BLVD.
TUCKER, GA 30084

CONSOLIDATED CONTROLS CORP.
15 DURANT AVE.
BETHEL, CT 06801

CONSOLIDATED HINGE & MANUFACTURED PROD.
1150-B DELL AVE.
CAMPBELL, CA 95008

CONTEL INFORMATION SYSTEMS
GOVERNMENT SALES DIVISION
11781 LEE JACKSON MEMORIAL HWY
FAIRFAX, VA 22033

CONTRAVES-GOERZ CORP.
CONTROL SYSTEMS RESEARCH DIV.
632 FT DUQUESNE BLVD
PITTSBURG, PA 15222

CONTROL DATA CORP.
AEROSPACE DIV.
P.O. BOX 609
MINNEAPOLIS, MN 55440

CONTROL DATA CORP.
215 MOFFETT PARK DRIVE
SUNNYVALE, CA 94086

CONTROL DATA CORP.
GOVERNMENT SYSTEMS DIVISION
3101 EAST 80TH STREET
MINNEAPOLIS, MN 55420

CUBIC CORP
DEFENSE SYSTEMS DIV.
9233 BALBOA AVE.
SAN DIEGO, CA 92123

DATACOM INC.
INDUSTRIAL PARK
P.O. BOX 278
FORT WALTON BEACH, FL 32548

DATAMETRICS CORP.
8966 COMANCHE AVE.
CHATSWORTH, CA 91311

DATATAPE INC.
A KODAK COMPANY
360 SIERRA MADRE VILLA DR.
PASADENA, CA 91109

DIGITAL EQUIPMENT CO
2525 AUGUSTINE DR.
SANTA CLARA, CA 95051

DIGITAL EQUIPMENT CORP
555 SPARKMAN DR. SUITE 1400
HUNTSVILLE, AL 35805

EAGLE PICHER INDUSTRIES INC.
ELECTRONICS DIV
P.O. BOX 47
JOPLIN, MO 64802

EASTMAN KODAK COMPANY
KODAK APPARATUS DIVISION
901 ELMGROVE ROAD
ROCHESTER, NY 14650

EDLER INDUSTRIES INC.
2101 DOVE STREET
NEWPORT BEACH, CA 92660

EG&G INC.
35 CONGRESS ST.
SALEM, MASS. 01970

ELECTROSPACE SYSTEMS INC.
P.O. BOX 831359
RICHARDSON, TX 75083

ENSIGN - BICKFORD CO.
660 HOPMEADOW ST.
SIMSBURY, CT 06070

E-SYSTEMS INC.
GARLAND DIV.
P.O. BOX 660023
DALLAS, TX 75266

FAIRCHILD CAMERA & INSTRUMENT CORP.
COMPUTER AIDED SYSTEMS DIVISION
1601 TECHNOLOGY DRIVE
SAN JOSE, CA 95115

FIBER MATERIALS INC.
BIDDEFORD INDUSTRIAL PARK
BIDDEFORD, ME 04005

FLOATING POINT SYSTEMS INC.
2111 LANDINGS DRIVE
MOUNTAIN VIEW, CA 94043

FORD AEROSPACE & COMMUNICATIONS CORP.
AERONUTRONIC DIV.
FORD RD.
NEWPORT BEACH, CA 92660

FORD AEROSPACE & COMMUNICATIONS CORP.
WDL DIV.
3939 FABIAN WAY
PALO ALTO, CA 94303

G AND H TECHNOLOGY
1649 - 17th ST.
SANTA MONICA, CA 90404

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2525 W. 190TH ST.
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SUN VALLEY, CA 91353

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COSTA MESA, CA 92627

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13041 CERISE AVENUE
HAWTHORNE, CA 90205

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6600 GULTON COURT NORTHEAST
ALBURQUERQUE, NM 87109

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BACCHUS WORKS
P.O. BOX 98
MAGNA, UTAH 84044

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110 FORDHAM ROAD MS440
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P.O. BOX 889 M/S 23-3034
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13350 U.S. HIGHWAY 19
CLEARWATER, FL 33546

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FEDERAL SYSTEMS OPERATIONS DIV.
7900 WESTPARK DRIVE
MC LEAN, VA 22102

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H T L K-WEST DIV.
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COLORADO SPRINGS, CO 80933

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1032 ELWELL COURT SUITE 212
PALO ALTO, CA 94303

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SAN DIEGO, CA 92123

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SENECA & JAMIESON ROADS
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NORDEN PLACE
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NORWALK, CT 06856

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ANAHEIM, CA 92803

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DENVER, CO 80210

OLIN CORPORATION
DEFENSE MARKETING
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EAST ALTON, IL 62024

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FIBERGLASS TOWER/OLEC-3
TOLEDO, OH 43659

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SEATTLE, WA 98144

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KNOXVILLE, TN 37919

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ELECTRO-OPTICAL DIVISION
100 WOOSTER HEIGHTS RD.
DANBURY, CT 06810

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P.O. BOX 69999
LOS ANGELES, CA 90022

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990 COMMERCIAL
SAN CARLOS, CA 94070

RACAL COMMUNICATIONS INC.
5 RESEARCH PLACE
ROCKVILLE, MD 20850

REYNOLDS INDUSTRIES INC.
5005 MC CONNELL AVE.
LOS ANGELES, CA 90066

ROLM CORP.
MSC DIVISION: MAIL STOP 130
ONE RIVER OAKS PL
SAN JOSE, CA 95134

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ELECTRO PRODUCTS DIVISION
3845 PLEASANTDALE ROAD
ATLANTA, GA 30340

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P.O. BOX 4000
HUNTSVILLE, AL 35802

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SYLMAR, CA 91342

SPERRY CORPORATION
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PHOENIX, AZ 85027

STADCO
1931 NORTH BROADWAY
LOS ANGELES, CA 90031

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2421 MISSION COLLEGE BLVD.
SANTA CLARA, CA 95050

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GAMAH DIV.
2501 DALLAS ST.
AURORA, CO 80010

SUNDSTRAND CORPORATION
SUNDSTRAND ENERGY SYSTEMS DIV.
4747 HARRISON AVENUE
ROCKFORD, IL 61101

SUNDSTRAND DATA CONTROL INC.
OVERLAKE INDUSTRIAL PARK
REDMOND, WA 98052

SYSTEMS CONTROL TECHNOLOGY INC.
1801 PAGE MILL ROAD
PALO ALTO, CA 94304

SYSTRON-DONNER CORPORATION
INERTIAL DIVISION
2700 SYSTRON DR.
CONCORD, CA 94518

THORN EMI TECHNOLOGY INC.
8601 DUNWOOD PL.
ATLANTA, GA 30338

TRANSCO PRODUCTS INC.
4241 GLENCOE AVE.
VENICE, CA 90291

UNIDYNAMICS PHOENIX INC.
P.O. BOX 2990
PHOENIX, AX 85062

CREST PRODUCTS CORP.
2000 S. SUSAN ST.
SANTA ANA, CA 92704

GOAL CHEMICAL SEALANTS CORP.
3137 E. 26TH STREET
LOS ANGELES, CA 90023

CAL-WIRE STRANDING COMPANY
3200 EST SLAUSON AVENUE
VERNON, CA 90058

CRESCOMM ENTERPRISES
10-B WASHINGTON AVE.
FAIRFIELD, NJ 07006

VER-VAL ENTERPRISES, INC.
182 GREENACRES RD.
FORT WALTON BEACH, FL 32549

WARNER AIRCRAFT ENG. CORP.
15500 TEXACO AVENUE
PARAMOUNT, CA 90723

AAA BRASS FOUNDRY, INC.
2275 JERROLD AVE.
SAN FRANCISCO, CA 94124

COLORADO FORGE CORPORATION
327 W. VERMIJO
COLORADO SPRINGS, CO 80903

MATTCO FORGE INC.
16443 MINNESOTA AVE.
PARAMOUNT, CA 90723

DATA SCIENCE
1189 ODDSTAD DRIVE
REDWOOD CITY, CA 94063

AFRO-LECON, INC.
WATSON INDUSTRIES DIV.
335 HARRISON ST.
JAMESTOWN, NY 14701

FRC CORP.
461 NELO ST.
SANTA CLARA, CA 95050

SAUCEDO METAL PRODUCTS, INC.
1596 SOUTH 7TH STREET
SAN JOSE, CA 95112

ANCHOR INDUSTRIES INC.
5031 NO. FIGUEROA ST.
LOS ANGELES, CA 90042

APPLIED ELECTRO TECHNOLOGY, INC.
2220 SOUTH ANNE STREET
SANTA ANA, CA 92704

THE BAR-PAT MFG. CO., INC.
375 HOWARD AVENUE
BRIDGEPORT, CT 06605

DAYTRON, INC.
634 NATIONAL AVE.
MOUNTAIN VIEW, CA 94043

CENTURY ELECTRONICS
5965 WASHINGTON BLVD.
CULVER CITY, CA 90230

ENGINEERED CONTROL SYSTEMS, INC.
ONE KELLY COURT
MENLO PARK, CA 94025

N. H. RESEARCH, INC.
16601 HALE AVENUE
IRVINE, CA 92714

PRECISION TUNING, INC.
562 WEDDELL DR., SUITE 5
SUNNYVALE, CA 94086

TEMPCO ELECTRIC HEATER CORP.
3630 NO. WOLF RD.
FRANKLIN PARK, IL 60131

APPLIED DETECTOR CORP.
2325 E. MCKINLEY AVE.
FRESNO, CA 93703

ATLANTIC-PACIFIC CIRCUITS
450 EAST TENTH ST.
TRACY, CA 95376

BO-SHERREL CO., INC.
36133 NILES BLVD.
FREMONT, CA 94536

CANDELA CORP.
96 SOUTH AVE.
NATICK, MA 01760

G. GENERAL ELECTRO-SOMPONENTS
70 WALNUT ST.
HARTFORD, CT 06120

GENERAL COMPONENTS, INC.
7425 124TH AVE., NO.
LARGO, FL 33543

MAURY MICROWAVE CORP.
8610 HELMS AVENUE
CUCAMONGA, CA 91730

MICROWAVE RESEARCH CORP.
1429 OSGOOD STREET
NORTH ANDOVER, MA 91845

ROSAN, INC.
2901 COAST HIGHWAY
NEWPORT BEACH, CA 92660

SPACE-LOK INC.
2526 NORTH ONTARIO STREET
BURBANK, CA 91504

DUROYD MFG. CO., INC.
10 KIMBALL PLACE
MOUNT VERNON, NY 10550

UNITED SEAL & RUBBER CO.
2980-J PINE STREET
DECATUR, GA 30030

ARRAL INDUSTRIES INC.
1630 SHEARWATER ST.
ONTARIO, CA 91761

HUNTLEY MACHINE & TOOL, INC.
4623 7TH AVENUE SOUTH
SEATTLE, WA 98108

PEREZ MACHINE, INC.
2110 GLADWICK STREET
COMPTON, CA 90220

AIR HARBOR MACHINE COMPANY, INC.
21611 PERRY STREET
CARSON, CA 90745

APARTAMIL, CORPORATION
15370 CHOLAME 9 & 10
VICTORVILLE, CA 92392

STANDARD TOOL & DIE
1931 NORTH BROADWAY
LOS ANGELES, CA 90031

DELS GENERAL MACHINE COMPANY
6308 DALE AVENUE
BUENA PARK, CA 90620

MACKMANES ENTERPRISES, INC.
2940 EAST MIRALOMA AVENUE
ANAHEIM, CA 92806

NOTTHOFF ENGINEERING, INC.
15651 CONTAINER LANE
HUNTINGTON BEACH, CA 92649

FLUROCARBON FABRICATORS
P.O. BOX 18319
SEATTLE, WA 98118

NORAL PRECISION COMPANY
32 G STREET N.W.
AUBURN, WA 98002

NYLON MOLDING COMPANY
260 SCHUYLER AVENUE
KEARNEY, NJ 07032

NU CON CORPORATION
34100 INDUSTRIAL ROAD
LIVONIA, MI 48150

METRIC PRECISION MACHINE
1946 WEST 144TH ST.
GARDENA, CA 90249

AUTOMATED MACHING, INC.
2615 N.W. UPSHUR
PORTLAND, OR 97210

CHASE-WALTON ELASTOMERS, INC.
29 APSLEY STREET, P.O. BOX A
HUDSON, MA 01749

PURDY CORPORATION
586 HILLIARD STREET
MAHCHESTER, CT 06040

MARVIN ENGINEERING CO., INC.
260 SEST BEACH AVENUE
INGLEWOOD, CA 90302

GRAPHIC RESEARCH, INC.
9334 MASON AVENUE
CHATSWORTH, CA 91311

PREMA ENGINEERING
9145 OWENSMOUTH AVENUE
CHATSWORTH, CA 91311

INSTRUMENT MACHINING
1726 NORTH TYLER STREET
SOUTH EL MONTE, CA 91733
ALL FAB, INC.
BLD. C-19 PAINE FIELD
EVERETT, WA 98204

MULTIWIRE WEST
3901 EAST LAPALMA
ANAHEIM, CA 92807

COMPUTER PRECISION
1741 ROGERS AVENUE
SAN JOSE, CA 95112

L & S MACHINE COMPANY
2019 SOUTH WEST BLVD.
P.O. BOX 12264
WICHITA, KS 67277

EVERGREEN INDUSTRIES, INC.
BUILDING C27, SNOHOMISH COUNTY AIRPORT
P.O. BOX 142
LYNWOOD, WA 98036

ELECTRO-MODULE, INC.
3501 HARBOR BLVD.
COSTA MESA, CA 92626

HONEYWELL TEST INSTRUMENTS DIVISION
4800 EAST DRY CREEK ROAD
DENVER, CO 80217

LAZ TOOL & MANUFACTURING COMPANY
14816 ROOSEVELT ROAD
SNOHOMISH, WA 98290

MELCO MANUFACTURING COMPANY
CUSTOMER SERVICE
14408 N.E. 20TH
BELLEVUE, WA 98007

TRIWAY MANUFACTURING COMPANY
6130 31ST AVENUE N.E.
P.O. BOX 39
MARYSVILLE, WA 98270

BOUSE MANUFACTURING COMPANY
2901 SOUTH CRODDY WAY
SANTA ANA, CA 92704

CERTIFIED MANUFACTURING COMPANY, INC.
SANDERSON FIELD
SHELTON, WA 98584

WITKO ENGINEERING
1518 WEST ROSECRANS
GARDENA, CA 90247

SPACE VECTOR CORPORATION
19631 PRARIE STREET
NORTHRIDGE, CA 91324

TELEDYNE SYSTEMS COMPANY
19601 NORDHOFF STREET
NORTHRIDGE, CA 91324

ASTRONAUTICS CORPORATION OF AMERICA
907 SOUTH FIRST STREET
MILWAUKEE, WI 53204

TAYCO
441 EAST 4TH STREET
LONG BEACH, CA 90802

GENERAL MICROWAVE CORPORATION
155 MARINE STREET
FARMINGDALE, LONG ISLAND, NY 11735

NURAD CORPORATION
2165 DRUID PARK DRIVE
BALTIMORE, MD 21211

EAGLE PICHER
P.O. BOX 47
JOPLIN, MO 64801

SCOTT, INC.
2525 CURTISS STREET
DOWNERS GORVE, IL 60515

LFE
FLUID CONTROLS DIVISION
100 SKIFF STREET
HAMDEN, CT 06514

MCGRAW EDISON COMPANY
WAGNER ELECTRIC DIVISION
100 MISTY LANE
PARSIPPANY, NJ 07054

TECHNETICS, INC.
6287 AROPAHOE AVENUE
P.O. BOX 910
BOULDER, CO 80306

TIMEX CORPORATION
INSTRUMENT PRODUCTS UNIT
WATERBURY, CT 06720

AYDIN VECTOR DIVISION
P.O. BOX 328
NEWTON, PA 18940

LEAR SEIGLER
INSTRUMENT DIVISION
4141 EASTERN AVENUE SE
GRAND RAPIDS, MI 49508

TALLEY INDUSTRIES OF ARIZONA
4551 EAST MCKELLIPS ROAD
MESA, AZ 85201

TELEDYNE CAST PRODUCTS
4200 WEST VALLEY BLVD.
P.O. BOX 2348
POMONA, CA 91766

TRACOR/MB ASSOC.
HIGHLAND INDUSTRIAL PARK
EAST CAMDEN, AR 71701

GOULD INC.
SEL COMPUTING SYSTEMS DIVISION
6901 WEST SUNRISE BLVD.
FORT LAUDERDALE, FL 33313

MOLINAS SHEET METAL COMPANY
14700 INDUSTRY CIRCLE
LA MIRADA, CA 90638

NORTH ATLANTIC INDUSTRIES, INC.
60 PLANT AVENUE
HAUPPAUGE, NY 11787

RACAL DANA INSTRUMENTS INC.
4 GOODYEAR STREET
IRVINE, CA 92713

REX PRECISION PRODUCTS, INC.
14831 MAPEL AVENUE
GARDENA, CA 90247

ROTEK INCORPORATED
1400 CHILLOCOTHE ROAD
AURORA, OH 44202

SAGE LABORATORIES, INC.
3 HURON DIRVE
NATICK, MA 01760

SPAULDING FIBER
1300 SOUTH 7TH STREET
P.O. BOX 867
DEKAIB, IL 60115

SPECIAL DEVICES, INC.
16830 WEST PLACERITA CANYON ROAD
NEWHALL, CA 91321

SEATS, INC.
350 NORTH DEWEY
P.O. BOX 60
REEDSBURG, WI 53959

HOLEX INC.
2751 SAN JUAN ROAD
HOLLISTER, CA. 95023

IMC MAGNETICS CORPORATION
EASTERN DIVISION
570 MAIN STREET
WESTBURY, NY 11590

KAISER ALUMINUM & CHEMICAL CORP.
ERIE WORKS
1015 EAST 12TH STREET
ERIE, PA 16512

KELVIN MANUFACTURING COMPANY
26 CONN STREET
WOBURN, MA 01801

LAMBDA ELECTRONICS CORP.
599 NORTH MAJODA AVENUE
SUNNYVALE, CA 94086

LEBANON STEEL CASTINGS
101 EAST LEHMAN STREET
LEBANON, PA 17042

MASON ELECTRIC COMPANY
440 LOS FELIZ ROAD
GLENDALE, CA 92104

AIRCRAFT POROUS MEDIA
6301 49TH STREET NORTH
PINELLAS PARK, FL 33565

BARRY CONTROLS
2323 VALLEY STREET
P.O. BOX 7710
BURBANK, CA 91505

CHEN INDUSTRIES
5965 WASHINGTON BLVD.
CULVER CITY, CA 90230

DUNCAN EQUIPMENT INC.
1800 PEYCO DRIVE SOUTH
ARLINGTON, TX 76017

ELGAR CORPORATION
8225 MERCURY COURT
SAN DIEGO, CA 92111

FLEXIBLE CIRCUITS INC.
PAUL VALLEY INDUSTRIAL PARK
WORRINGTON, PA 18976

GOEX, INC.
423 VAUGHN ROAD WEST
CLEBURNE, TX 76031

GULTON INDUSTRIES
EMD DIVISION
13041 CERISE AVENUE
HAWTHORNE, CA 90250

RENTON COIL SPRING COMPANY
325 BURNETT AVENUE NORTH
P.O. BOX 328
RENTON, WA 98057

MIFFLIN MACHINE
2424 EAST SERGEANT STREET
PHILADELPHIA, PA 19125

ALFA-LAVAL
2115 LINWOOD AVENUE
FORT LEE, NJ 07024

AMERICAN METAL BEARING CO.
7191 ACACIA AVENUE
GARDEN GROVE, CA 92641

BIRD-JOHNSON CO.
110 NORFOLD STREET
WALPOLE, MA 02081

BUFFALO FORGE CO.
P.O. BOX 985
490 BROADWAY
BUFFALO, NY 14240

CARRIER TRANSICOLD CO.
P.O. BOX 4805
SYRACUSE, NY 13221

CARVER PUMP CO.
1056 HERSHEY AVENUE
MUSCATINE, IA 52761

CLA-VAL CO.
P.O. BOX 1325
NEWPORT BEACH, CA 92663

COLT INDUSTRIES OPERATING CORP.
FAIRBANKS - MORSE ENGINE DIVISION
701 LAWTON AVENUE
BELOIT, WI 53511

COMBUSTION ENGINEERING
WINDSOR, CT 06095

DOVER BLACKMER
1809 CENTURY AVENUE S.W.
GRAND RAPIDS, MI 49509

DRESSER INDUSTRIES, INC.
ROOTS BLOWER OPERATIONS
900 W. MOUNT STREET
CONNERSVILLE, IN 47331

EATON CORP.
CUTLER HAMMER PRODUCTS
POWER CONTROL DIVISION
4625 NORTH 30TH STREET
MILWAUKEE, WI 53216

HENSCHEL/NELSON
P.O. BOX 35493
TULSA, OK 74135

INTERNATIONAL SWITCHBOARD CORP.
P.O. BOX 40425
HOUSTON, TX 77040

J. J. HENRY CO., INC.
WEST PARK DRIVE
MT. LAUREL INDUSTRIAL PARK
MOORESTOWN, NJ 08057

JERED BROWN BROS., INC.
1300 SOUTH COOLIDGE ROAD
BIRMINGHAM, MI 48008

KEYSTONE VALVE DIVISION
KEYSTONE INTERNATIONAL, INC.
P.O. BOX 40010
9700 WEST GULF BANK DRIVE
HOUSTON, TX 77040

LAKESHORE, INC.
P.O. BOX 809
IRON MOUNTAIN, MI 49801

PAUL-MUNROE HYDRAULICS, INC.
P.O. BOX 5900
ORANGE, CA 92667

PHILADELPHIA GEAR CORP.
181 SOUTH GULPH ROAD
KING OF PRUSSIA, PA 19406

RIX INDUSTRIES
6460 HOLLIS STREET
EMERYVILLE, CA 94608

STEWART-WARNER ELECTRONICS DIVISION
STEWART-WARNER CORP.
1300 N. KOSTNER AVENUE
CHICAGO, IL 60651

TANO CORPORATION
4301 POCHE COURT WEST
NEW ORLEANS, LA 70129

THE L.C. DOANE CO.
10 NEW CITY STREET
ESSEX, CT 06426

TRANSAMERICA DELAVAL, INC.
IMO PUMP DIVISION
P.O. BOX 447
MONROE, NC 28110

TRANSCO NORTHWEST, INC.
1149 WEST ANDOVER PARK
SEATTLE, WA 98188

UNIDYNAMICS/ST. LOUIS, INC.
472 PAUL AVENUE
ST. LOUIS, MO 63135

VARO, INC.
2203 WEST WALNUT STREET
P.O. BOX 401426
GARLAND, TX 75040

WORTHINGTON GROUP
MCGRAW-EDISON CO.
P.O. BOX 69
BUFFALO, NY 14240

WALWORTH
115 SHAWMUT RD.
CANTON, MA 02021

RAYTHEON CO.
EQUIPMENT DIVISION
20 SEYON ST.
WALTHAM, MA 02254

APPENDIX D

DOD PERSONNEL INTERVIEW

1. Do you think "Profit Policy" is a motivator for capital investment?

2. In your opinion, are prime contractors concerned with motivating subcontractors to make productivity enhancing capital investments?

3. Do you perceive a decline in the subcontractor industrial base?

4. Do you see a need for the DOD to be concerned with motivating subcontractors to make investments or should market forces prevail?

5. What methods would you recommend for capital investment incentivization of subcontractors other than profit policy?

6. Are there any initiatives or ongoing programs within DOD to improve subcontractor productivity and reduce long lead times for critical materials with which you are familiar?

7. As an overview, how do you currently use the industrial base and what efforts should be made to improve the base?

APPENDIX E

SURVEY NARRATIVE QUESTION COMPILATION

FIRMS/DIVISIONS WHO ARE SUBCONTRACTORS GREATER THAN 75% OF THE TIME

8. Is your company aware of the DOD Profit Policy and specifically the capital investment incentivization portion of the policy? (If yes, what has been the impact on your firm)

* Share of Savings.

* Weighted guidelines and CAS 414 applied in pricing calculations

* None of any consequence, the CAS 414 enables partial recovery of corporate interest charges on negotiated contracts.

* Occasionally use WGL as a tool in our fee negotiations. Policies have been established to ensure careful consideration of costs and benefits associated with capital investment and related DOD compensations.

* No Significant Impact

* Nothing Positive

* Impacts us only indirectly in that it provides for improved profits and profit is the source of capital investments.

11. What methods do prime contractors use to incentivize your firm to make these productivity enhancing capital investments?

* Cooperative teams investigate processes for cost reductions

* Guaranteed rate of production and larger percentage of dual source production

* The potential for production programs as a follow on to FSD typically has the greatest impact on decisions to invest in new capital.

* Combined efforts on R&D projects

* Essentially only one -- Competition

* Mild encouragements on an "as appropriate" basis during routine business

* One prime purchased the equipment for us. Other prime is considering purchasing for us or might commit to long term orders as an incentive instead.

* Interested in our reliability, and unique ability (time, price and performance) to stated needs.

* Price pressure and value engineering opportunities.

* Engineering consultations.

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor. (Please explain your response)

* In recent years the mood of the primes is to try and create a feeling of partnership and closer relations to assure dependable long term commitment.

* To provide spares.

* Primarily to insure that dependable reliable and competitive sources are available in the future to support program needs.

* Our products must generally be qualified by extensive destruction testing. Once the product is qualified the cost of qualifying an alternate product gives the prime a very strong economic incentive in our survival.

* 25% of our products are qualified to the contractors' specifications and have non-recurring engineering costs which they would need to duplicate if we did not exist, either by furnishing build-to-print drawings or by purchasing a new design.

* As a qualified source with good quality and delivery history effort is made to maintain our support of critical programs.

* Primarily to provide multiple potential procurement sources.

* We are a significant volume sub in our own right in addition to being a partner in a joint venture with years of

defense experience/involvement. We've developed a close working relationship with our primes and they value our capabilities.

* Prime interest seems to be price.

* We provide a product and service which is available only from a very limited number of firms throughout the world. Our viability is therefore vital within the defense contracting market.

* Customers often visit us to try and resolve problems so that price and delivery impacts are not so great that they would exclude us in future operations.

* In some instances a particular subcontract manager or program manager from a selfish point of view. But, never a coordinated or structured effort.

* Generally, no. However, in specific instances the prime or Navy is interested in our special capabilities. Our facilities at present have no equal in the U.S.

* Primes require on-time delivery of high quality competitively priced, state-of-the-art equipment which will be supported for long time periods. We fulfill this need, thus our customers know they can count on us and want us to continue as a defense subcontractor.

* We are the requisite technology on at least one program.

* Business transactions are based on each party's individual interests and the best deal for each procurement action.

* Primes are definitely interested in maintaining dependable vendors who produce quality products, and in fact will be in business tomorrow.

14. Is your firm familiar with the concept and implementation of productivity enhancement capital investment programs such as IMIP, MANTECH, or TECHMOD programs? (If yes, in what manner has one or more of these programs affected your firm)

* Currently in discussion stage.

* Just recently offered -- no impact to date.

* Not enough people to implement.

* None in the division (elsewhere in corporation such programs are being considered)

* No effect. These programs are normally utilized on much larger firms who are engaged in more capital intensive manufacturing.

* A business planning group has been formulated and this is one area of interest which they are pursuing.

* Phase 1 MANTECH for F-16 -- No effect yet.

* None significantly to date since we recently agreed to participate in the GD/Fort Worth program.

* We made a proposal to participate in TECHMOD. Prime did not choose to proceed with us, since we were not awarded a contract in a competitive procurement.

17. If the answer to Question 16 was negative please explain. (16. Does government defense business provide the same profitability, using your measure of profitability, as does your commercial business?)

* On occasion less profitable because of stringent standards. Otherwise, profitability is about on par with commercial products of the same type.

* Government only allows 10% profit.

* Profit is limited.

* Government (DAR & FAR) regulations contain certain disallowables which never-the-less make up our cost of doing business.

* Because of progress payments interest expense is disallowed when in fact we must pay for borrowed money even in most cases to finance a government order. Allowed profit percentages are too low to absorb the difference. It is very difficult to purchase capital equipment and expect to maintain existing equipment without paying interest on borrowed money needed to finance the new equipment. Maximum profit percents negotiated are 10% and interest on money is 15-16%.

* Audits by government doesn't recognize the cost of money; usually knocks down burden rates; usually knocks down profit allowance.

* Certain commercial contracts are much more profitable but some tend to be short term and small volume.

* With the dominant factor being price, and the increased involvement of additional agencies (DCAS, DCAA, etc.) it is

impossible in our view to compare profits in defense business with normal commercial activity.

* Government profit policies limit the maximum profit regardless of contractors' risk. Some of our commercial customers require short lead times which require our maintaining large inventories of complete end component parts. For this service, they are willing to pay higher profits.

* It costs considerably more money to do business with the Government or Government primes. They impose more requirements (e.g., source inspection, DD 250s, audits, countless regulations, etc.). Also profit (as a percentage of total cost) is restricted.

* Our strategic plan no longer considers commercial business.

* Defense business and particularly Navy business has at best been marginally profitable. We are generally involved as a subcontractor at the first or second tier level and work on a FFP basis where the customer may in fact be working with a CPFF or similiar contract. If our estimates are wrong or problems develop increasing our internal cost, we are pretty much stuck without any way to recover the costs. We are a firm that does a relatively small amount of Govenrment work and do not maintain staff dedicated to administering such contracts.

* Government business does not allow for all cost to be recovered. Government personnel negotiate most of the business and will not allow higher profit rates which commercial business allows.

* The Government profit policies do no adequately reward innovation since price is a function of cost.

* "Financial Accounting" and "Government Accounting" of profitability differs in at least one respect - the inclusion and/or exclusion of debt service. Debt service, unfortunately, seems to have to be carried as a burden by other divisions in order for the desired financial profitability goals and in some cases, the market place does not allow this excess burden. Commercial profitability is measured against sales as a percent and government profits is a percent of cost - not to exceed rate.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investment? (Please explain your response)

* Yes. Increase production and lower costs.

* No. Competition is sufficient.

* No. As previously stated the probability of production follow-on is the best incentive for capital investment.

* Yes. Would help us in determining the equipment that will be most useful in our operation.

* Yes. Small aerospace job shops are vital to the national defense of our country.

* Yes. In order to allow small business to expand they must purchase new equipment and hire and train new people. No Government contractor or DCAA auditor will allow these kinds of costs when in some cases they (the costs) do not apply directly to the contract they are auditing for.

* Yes. It should yield growth opportunities and financial aid in achieving that growth.

* Yes. It would be helpful, however, the need for capital investment is generally dictated by actual need and obvious necessity.

* Yes. Generally speaking, production costs often remain high due to "short term" motivation to maximize return on assets and net profitability at the expense of updating plant facility and equipment.

* Yes. However, the Government is pulling the strings and the primes can only pass along that latitude in incentives granted them from above.

* No. Prime contractors are in no way aware of the problems or future needs of a small company such as ours.

* Yes. Without question -- With the Government expecting a low profit margin there remains little incentive for capital improvement to lower costs in a small company like ours.

* I guess it depends on the incentive. It must go beyond the concept of capital cost of money which is given with one hand and taken back with the other.

* Yes. DOD contractors demand higher reliability and quality but do not incentivize capital equipment upgrade or investment.

* Yes. Every effort should be made by the Government directly or through its' primes to provide incentives to enhance our continued profitability and growth. We must achieve profit margins which will permit us to continue our efforts in the government sector. More often than not, buyers tend to negotiate the lowest possible profit without regard to the Governments overall policy of reasonable profit and return.

* Yes. To the extent that they also share in the same incentive. Incentives, which in principle, sound good, in practice seem very difficult to implement with todays multitude of regulations, and in fact, competition.

* No. The decision to make capital investments is based on many variables. Prime contractors cannot effectively direct the capital investment needs of a supplier. The procurement practices of the Government tend to discourage investments because of the short term (yearly) procurement cycles that Government contracts follow. In order to justify major capital investments, long term commitments are needed to provide an opportunity for a return on the investment.

FIRM/DIVISION DOD BUSINESS AS A SUBCONTRACTOR IS LESS THAN 75% BUT GREATER THAN 10%

8. Is your company aware of the DOD Profit Policy and specifically the capital investment incentivization portion of the policy? (If yes, what has been the impact on your firm)

* Very little

* Has allowed for more capital investment generally.

* Small impact as the policy is not one that identifies significant amounts that are realistically recognized by DOD or NASA procurement personnel. Weighted guidelines are of little help.

* Negligible

* Little. Substantial investment in machinery and test equipment, which is not required, would be needed to make any significant impact in profit policy.

* No impact other than cost of money for facilities capital.

* No impact at present time, however, we are currently evaluating our present position to determine advantages and/or disadvantages.

* Our Government (Navy) product line is given favorable consideration respecting capital investment.

* Very little. As with all profit policies to date "bottom line" price becomes the driver.

11. What methods do prime contractors use to incentivize your firm to make these productivity enhancing capital investments?

* Competitive nature of business and desire to maintain position on major programs generally require a high level of production efficiency. Often we must commit to production prices which can only be achieved through capital investments to reduce labor intensity in order to assure our competitive position on such programs.

* They describe tasks which we could compete on if specific capital equipment was in place.

* Share of Savings.

* Potential of greater numbers to be built. This based on number of vessels, number of units required.

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor? (Please explain your response)

* Any concerns which exist at the prime level seems to be related to their ability to remain a viable defense contractor, and they are interested in us only as we affect their performance.

* Primes view the problem only for themselves. Subcontract management personnel do not appreciate subcontractor problems.

* In general our prime contractors are satisfied with our equipment and desire to continue using us as a source for future defense business.

* We offer technology which is unique.

* My impression is that we're too small for the prime to take a sincere interest.

* They survey our capacity and capabilities in some cases prior to award of contracts. Also assist in tech and engineering as required.

* We are one of five primary producers in our field of technology and provide some unique capabilities for some products.

* Most primes we deal with have major long term weapons contracts, therefore they want long term support, e.g., technology/capability.

* Only when you can make them more competitive or have skill required that they don't currently possess.

* In most cases, due to a very small number of companies performing the type of work we do, the loss of one competitor could place the prime in a situation of sole source procurement on a critical component.

* It seems to be "If you can't do it at our price we will find someone who can".

* Most of the primes take a rather benevolent attitude toward small business subcontractors. Probably motivated by self interest due to inexperienced subcontractors, the primes are trying to avoid heavy handed dealings which result in delays, disputes, terminations, etc. Once a subcontractor is judged stable and reliable primes seem mainly motivated by delivery, price and quality.

* We are well known for high tech capabilities among Government and prime contractors. They do recognize the need for competition and for contractors/subcontractors who perform.

* Only if you can meet all his requirements at a price he can negotiate downward. Not always in the best interest of the company.

* Generally they recognize the advantage of having a healthy subcontractor base.

* They need competition when they are bidding prime contracts. In addition, the prime depends on his subcontractors for quality and "on-time" performance so his schedules and costs are controlled.

* To the extent competition is needed to make the prime competitive.

* Many shipbuilding programs would result in substantial costs to the shipyard (prime) if they had to change vendors halfway through a program.

* Limited number of potential suppliers.

14. Is your firm familiar with the concept and implementation of productivity enhancement capital investment programs such as IMIP, MANTECH, or TECHMOD programs? (If yes, in what manner has one or more of these programs affected your firm)

* Have one Government contract.

* We are currently studying possible areas for utilization of an IMIP agreement with NAVAIR.

* Not conclusive, since we have had an aggressive capital program for several years to build a new plant. MANTECH or IMIP may accelerate modernization of the older plant.

* Familiar with programs but have not participated in them at this time.

* Opportunities to participate in these programs have only recently been afforded to us.

* No effect. Getting involved, approved, paper filed, etc. Finding out who, what, and where is too involved, troublesome and not worth the effort. It takes a cost of thousands to get any of these programs going.....The best way is to do it without Government involvement! It's faster and cheaper.

17. If the answer to Question 16 was negative please explain. (16. Does Government defense business provide the same profitability, using your measure of profitability, as does your commercial business?)

* The structure and requirements on Government contracts provide less flexibility in program implementation. An example is: Commercial contracts can take advantage of the latest technological developments, Government contracts often require additional testing and justification.

* Prices to the Government are depressed below commercial prices, due to bids on large quantities on annual basis.

* Government has a cap of 12%.

* Currently return on Government work is acceptable because commercial side has been hurting. When commercial markets are good - return is much better.

* Statutory limits are placed on profit in Government business.

* Government work offers lower profits, however, in general the volume is greater.

* Limitation of DCASMA and DCAA including losses due to competition of holding on in the market place results in none if any profit from products from industry.

* Margins on commercial products are higher. Products are developed privately and priced based upon market conditions.

* Commercial business is very competitive and does not concern itself with how much profit you make or quote, etc., Government business, even when highly competitive gets upset with profit factors greater than 8%.

* DAR/FAR and NASA profit limitations plus the allowable cost and restriction on secret costs which is now existent in the commercial market.

* Lower percent profit on sales but generally higher on return on investment.

* Government defense business usually has hidden amounts of administrative costs which are not reflected in the pricing, therefore less profit on defense business.

* Couldn't compete at the same level - Navy or Government work highly competitive - Pricing is major determining factor in making a sale -- Many jobs taken at cost or even less -- No profit.

* Defense contractors are tightly controlled. Being "first or best" in a defense market does not necessarily increase profits.

* Frequently it does not when you factor in the G&A the Government does not accept (interest, Government salespeople, etc.,) otherwise it's about the same.

* Usually labor (engineering) intensive. Quantities small. Combination leads to poor dollar return based on effort required.

* Government guidelines, audits, specifications, standards, and reviews restrict profit and/or margin by increasing operating costs.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investment? (Please explain your response)

* We don't see how it would work at this point. We've bought new equipment on our own, as we've seen the need. What kind of incentives could they provide?

* Yes. Must recognize in profit negotiations and look at IMIP type contracting.

* Yes. Small business subcontractors must be assisted to enable them to make the necessary capital investments to remain viable in the inudstry. Ordinarily pay-out is too long for small business to capitalize much equipment. If it were incentivized per unit prices to the prime and ultimately the Government would drop.

* Yes. In today's market we must see the work prior to investment to minimize risk of capital funds.

* Yes. If a defense contractor is incentivized in their prime contract they should also flowdown the provision in their subcontracts.

* Yes. To the extent needed to meet the primes objectives.

* Yes. Selfishly, it almost insures a vested interest by the prime, hence a more long term relationship can be developed. Future/ongoing business is probably a bottom line incentive for small business concerns.

* Yes. If the contracts can justify the capital investment.

* Yes. If programs were flexible, since technologies, program requirements and companies create widely varying needs.

* Yes. The large primes generally have contracts that allow them to take advantage of capital investment programs. However, there is very little pass through to the subcontractors.

* Yes. It would reduce cost for certain large or long term programs (5 years or more). However, it must be more specifically defined and make profit incentive relate to the amount of documented investment.

* Yes. The dichotomy is simply if we invest in capital improvements will we be in a better position to capture the competitive procurement for the next fiscal year or will we obligate ourselves and due to a declining commercial market, find our competition dropping the price to unacceptably low level to capture the business. Multi-year procurements seem to be an easy and workable solution to provide stability.

* Yes. Only where the program is large enough to offer significant inducements for such investment.

* Yes. We, like most business firms, will make capital investments where there are opportunities to compete for profits. That opportunity is the incentive subs need from primes.

* Yes. Only if they could guarantee orders if we indeed made a capital investment.

* No. Unless some very specialized investments are required for a particular product or contract.

* Yes. In certain instances with adequate advanced study and inputs from the subcontractor. However, blanket imposition of incentive programs could tend to increase subcontractor burden.

* No. We offer competitive bids for most jobs we book. If we cannot compete then another firm will win. It is then up to us to make our firm more competitive. It is no business of either a prime or Government.

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor?

* The prime has his own problems, he has not time or inclination to be concerned with the productivity of some small subcontractor. The only time he becomes interested in such things is when the subcontractor is an important single source.

* As much as I like to get defense contracts I find it very difficult to cut through the red tape.

* Because they only look at prices they pay for parts.

17. If the answer to Question 16 was negative please explain. (16. Does Government defense business provide the same profitability using your measure of profitability as does your commercial business?

* The only prime contract ever issued by Washington required full disclosure of all financial aspects of the project, thus profit was set as a percentage of sales price by Government regulation.

* The competitive nature of the subcontract letting procedure keep this from happening. We (subcontractors) are all bidding against ourselves.

* Companies must have state-of-the-art equipment to do Government work and low paid labor base. Even with the above conditions it is hard to get Government work.

* Usually labor (engineering) intensive. Quantities small. Combination leads to poor dollar return based on effort required.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investments?

* The existing facilities can and do accomodate volumes of product many times the volume required by defense contractors.

* We need the positive pressure they can exert - it's a forcing function which would be beneficial to all parties. We seldom take the time or have the necessary human resources to look at ourselves.

* I would rather see the Government look for more in a company than price alone, i.e., quality control, standard, on-time delivery, etc. Let the manager of the company make capital investment decisions as business increases.

8. Is your company aware of the DOD Profit policy and specifically the capital investment incentivization portion of the policy? (If yes, what has been the impact on your firm?)

* Share of Savings.

* Weighted guidelines and CAS 414 applied in pricing calculations

* None of any consequence, the CAS 414 enables partial recovery of corporate interest charges on negotiated contracts.

* Occasionally use WGL as a tool in our fee negotiations. Policies have been established to ensure careful consideration of costs and benefits associated with capital investment and related DOD compensations.

* Very little

* Has allowed for more capital investment generally.

* Negligible

* Small impact as the policy is not one that identifies significant amounts that are realistically recognized by DOD or NASA procurement personnel. Weighted guidelines is of little help.

* No significant impact

* No impact other than cost of money for facilities capital.

* Nothing positive

11. What methods do prime contractors use to incentivize your firm to make these productivity enhancing capital investments?

* Guaranteed rate of production and larger pecentage of dual source production

* The potential for production programs as a follow on to FSD typically has the greatest impact on decisions to invest in new capital.

* Combined efforts on R&D projects

* Essentially only one -- Competition

* Mild encouragements on an "as appropriate" basis during routine business

* One prime purchased the equipment for us. Other prime is considering purchasing for us or might commit to long term orders as an incentive instead.

* Interested in our reliability, and unique ability (time, price and performance) to stated needs.

* They describe tasks which we could compete on if specific capital equipment was in place.

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor? (Please explain your response)

* To provide spares.

* Primarily to insure that dependable reliable and competitive sources are available in the future to support program needs.

* Our products must generally be qualified by extensive destruction testing. Once the product is qualified the cost of qualifying an alternate product gives the prime a very strong economic incentive in our survival.

* Twenty five (25) percent of our products are qualified to the contractors' specifications and have non-recurring engineering costs which they would need to duplicate if we did not exist, either by furnishing build-to-print drawings or by purchasing a new design.

* As a qualified source with good quality and delivery history effort is made to maintain our support of critical programs.

* We are a significant volume sub in our own right in addition to being a partner in a joint venture with years of defense experience/involvement. We've developed a close working relationship with our primes and they value our capabilities.

* Customers often visit us to try and resolve problems so that price and delivery impacts are not so great that they would exclude us in future operations.

* In some instances a particular subcontract manager or program manager from a selfish point of view. But, never a coordinated or structured effort.

* Primes view the problem only for themselves. Subcontract management personnel do not appreciate subcontractor problems.

* We offer technology which is unique.

* My impression is that we're too small for the prime to take a sincere interest.

* Most primes we deal with have major long term weapons contracts, therefore they want long term support, e.g., technology/capability.

* Only when you can make them more competitive or have skill required that they don't currently possess.

* It seems to be "If you can't do it at our price we will find someone who can".

* Most of the primes take a rather benevolent attitude toward small business subcontractors. Probably motivated by self interest due to inexperienced subcontractors, the primes are trying to avoid heavy handed dealings which result in delays, disputes, terminations, etc..... Once a subcontractor is judged stable and reliable primes seem mainly motivated by delivery, price and quality.

* Primes require on-time delivery of high quality competitively priced, state-of-the-art equipment which will be supported for long time periods. We fulfill this need, thus our customers know they can count on us and want to continue as a defense subcontractor.

* Primes are definitely interested in maintaining dependable vendors who produce quality products, and in fact will be in business tomorrow.

14. Is your firm familiar with the concept and implementation of productivity enhancement capital investment programs such as IMIP, MANTECH, or TECHMOD programs? (If yes, in what manner has one or more of these programs affected your firm?)

* Just recently offered -- No impact to date

* None in the division (elsewhere in corporation such programs are being considered)

* No effect. These programs are normally utilized on much larger firms who are engaged in more capital intensive manufacturing.

* A business planning group has been formulated and this is one of interest which they are pursuing.

* Familiar with programs but have not participated in them at this time.

* None significantly to date since we recently agreed to participate in the GD/Fort Worth program.

* Phase 1 MANTECH for F-16 -- No effect yet.

* No effect. Getting involved, approved, paper filed, etc. Finding out who, what, and where is too involved, troublesome and not worth the effort. It takes a cost of thousands to get any of these programs going...the best way is to do it without Government involvement!! It's faster and cheaper.

17. If the answer to question 16 was negative please explain. (16. Does Government defense business provide the same profitability, using your measure of profitability, as does your commercial business?)

* Government only allows 10% profit.

* Government (DAR & FAR) regulations contain certain disallowables which never-the-less make up our cost of doing business.

* Because of progress payments interest expense is disallowed when in fact we must pay for borrowed money even in most cases to finance a Government order. allowed profit percentages are too low to absorb the difference. It is very difficult to purchase capital equipment and expect to maintain existing equipment without paying interest on borrowed money needed to finance the new equipment. Maximum profit percents negotiated are 10% and interest on money is 15-16%.

* Certain commercial contracts are much more profitable but some tend to be short term and small volume.

* Our strategic plan no longer considers commercial business.

* Government has a cap of 12%.

* Currently return on Government work is acceptable because commercial side has been hurting. When commercial markets are good - return is much better.

* Government work offers lower profits, however, in general the volume is greater.

* Limitation of DCASMA and DCAA including losses due to competition of holding on in the market place results in none if any profit from products for industry.

* Commercial business is very competitive and does not concern itself with how much profit you make or quote etc.... Government business, even when highly competitive gets upset with profit factors greater than 8%.

* DAR/FAR and NASA profit limitations plus the allowable cost and restriction on secret costs which is non existent in the commercial market.

* Government business does not allow for all cost to be recovered. Government personnel negotiate most of the business and will not allow higher profit rates which commercial business allows.

* Government guidelines, audits, specifications, standards, and reviews restrict profit and/or margin by increasing operating costs.

* "Financial accounting" and "Government accounting" of profitability differs in at least one respect - The inclusion and/or exclusion of debt service. Debt service, unfortunately, seems to have to be carried as a burden by other divisions in order for the desired financial profitability goals and in some cases, the market place does not allow this excess burden. Commercial profitability is measured against sales as a percent and Government profits is a percent of cost with a not to exceed rate.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investment? (Please explain your response)

* Yes. Increase production and lower costs.

* No. As previously stated the probability of production follow-on is the best incentive for capital investment.

* Yes. Would help us in determining the equipment that will be most useful in our operation.

* Yes. In order to allow small business to expand they must purchase new equipment and hire and train new people. No Government contractor or DCAA auditor will allow these kinds of costs when in some cases they (the costs) do not apply directly to the contract they are auditing for.

* Yes. It would be helpful, however, the need for capital investment is generally dictated by actual need and obvious necessity.

* Yes. However, the Government is pulling the strings and the primes can only pass along that latitude in incentives granted them from above.

* Yes. Without question -- With the Government expecting a low profit margin there remains little incentive for capital improvement to lower costs in a small company like ours.

* Yes. Must recognize in profit negotiations and look at IMIP type contracting.

* Yes. Small business subcontractors must be assisted to enable them to make the necessary capital investments to remain viable in the industry. Ordinarily pay-out is too long for small business to capitalize much equipment. If it were incentivized per unit prices to the prime and ultimately the Government would drop.

* Yes. In today's market we must see the work prior to investment to minimize risk of capital funds.

* Yes. To the extent needed to meet the primes objectives.

* Yes. Selfishly, it almost insures a vested interest by the prime, hence a more long term relationship can be developed. Future/ongoing business is probably a bottom line incentive for small business concerns.

* Yes. The large primes generally have contracts that allow them to take advantage of capital investment programs, however, there is very little pass through to the subcontractors.

* Yes. It would reduce cost for certain large or long term programs (5 years or more). However, it must be more specifically defined and make profit incentive relate to the amount of documented investment.

* Yes. We, like most business firms, will make capital investments where there are opprotunities to compete for profits. That opportunity is the incentive subs need from primes.

* Yes. DOD contractors demand higher reliability and quality but do not incentivize capital equipment upgrade or investment.

* Yes. Every effort should be made by the Government directly or through its' primes to provide incentives to enhance our continued profitability and growth. We must achieve profit margins which will permit us to continue our efforts in the Government sector. More often than not, buyers tend to negotiate the lowest possible profit without regard to the Governments overall policy of reasonable profit and return.

* No. We offer competitive bids for most jobs we book. If we cannot compete then another firm will win. It is then up to us to make our firm more competitive. It is no business of either a prime or Government.

* Yes. To the extent that they also share in this same incentive. Incentives, which in principle sound good, in practice seem very difficult to implement with today's multitude of regulations, and in fact, competition.

8. Is your company aware of the DOD Profit Policy and specifically the capital investment incentivization portion of the policy? (If yes, what has been the impact on your firm?)

* Little. Substantial investment in machinery and test equipment, which is not required, would be needed to make any significant impact in profit policy.

* No impact at present time, however, we are currently evaluating our present position to determine advantages and/or disadvantages.

* Our Government (Navy) product line is given favorable consideration respecting capital investment.

* Very little. As with all profit policies to date "bottom line" price becomes the driver.

* Impacts us only indirectly in that it provides for improved profits and profit is the source of capital investments.

11. What methods do prime contractors use to incentivize your firm to make these productivity enhancing capital investments?

* Competitive nature of business and desire to maintain position on major programs generally require a high level of production efficiency. Often we must commit to production prices which can only be achieved through capital investments to reduce labor intensity in order to assure our competitive position on such programs.

* Potential of greater numbers to be built. This is based on number of vessels, number of units required.

* Share of savings.

* Via IMIP - Such a plan was under consideration in connection with an F-16 competition. We were unsuccessful and the prime dropped us from consideration. This was a one time occurence.

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor? (Please explain your response)

* In recent years the mood of primes is to try and create a feeling of partnership and closer relations to assure dependable long term commitment.

* Primarily to provide multiple potential procurement sources.

* Prime interest seems to be price.

* We provide a product and service which is available only from a very limited number of firms throughout the world. Our viability is therefore vital with the defense contracting market.

* Any concerns which exist at the prime level seems to be related to their ability to remain a viable defense contractor, and they are interested in us only as we affect their performance.

* In general our prime contractors are satisfied with our equipment and desire to continue using us as a source for future defense business.

* The prime has his own problems, he has no time or inclination to be concerned with the productivity of some small subcontractor. The only time he becomes interested in such things is when the subcontractor is an important single source.

* They survey our capacity and capabilities in some cases prior to award of contracts. Also assist in tech and engineering as required.

* We are one of five primary producers in our field of technology and provide some unique capabilities for some products.

* In most cases, due to a very small number of companies performing the type of work we do, the loss of one competitor could place the prime in a situation of sole source procurement on a critical component.

* Because they only look at prices they pay for parts.

* Only if you can meet all his requirements at a price he can negotiate downward. Not always in the best interest of the company.

* Generally they recognize the advantage of having a healthy subcontractor base.

* They need competition when they are bidding prime contracts. In addition, the prime depends on his sub-contractors for quality and "on-time" performance so his schedules and costs are controlled.

* To the extent competition is needed to make the prime competitive.

* Many shipbuilding programs would result in substantial costs to the shipyard (prime) if they had to change vendors halfway through a program.

* We are the requisite technology on at least one program.

* Business transactions are based on each party's individual interests and the best deal for each procurement action.

14. Is your firm familiar with the concept and implementation of productivity enhancement capital investment programs such as IMIP, MANTECH, or TECHMOD programs? (If yes, in what manner has one or more of these programs affected your firm?)

* Currently in discussion state

* Not enough people to implement

* We are currently studying possible areas for utilization of an IMIP agreement with NAVAIR.

* Not conclusive, since we have had an aggressive capital program for several years to build a new plant. MANTECH or IMIP may accelerate modernization of the older plant.

* Opportunities to participate in these programs have only recently been afforded to us.

* We made a proposal to participate in TECHMOD. Prime did not choose to proceed with us, since we were not awarded a contract in a competitive procurement action.

17. If the answer to question was negative please explain. (16. Does Government defense business provide the same profitability, using your measure of profitability, as does your commercial business?)

* On occasion less profitable because of stringent standards. Otherwise, profitability is about on par with commercial products of the same type.

* Profit is limited

* Audits by Government doesn't recognize the cost of money; usually knocks down burden rates; usually knocks down profit allowance.

* With the dominant factor being price, and the increased involvement of additional agencies (DCAS, DCAA, etc.) it is impossible in our view to compare profits in defense business with normal commercial activity.

* Government profit policies limit the maximum profit regardless of contractors' risk. Some of our commercial customers require short lead times which require our maintaining large inventories of complete end component parts. For this service, they are willing to pay higher profits.

* It costs considerably more moeny to do business with the Government or Government primes. They impose more requirements, i.e., source inspections, DD 250s, audits, countless regulations, etc. Also profit (as a percentage of total cost) is restricted.

* The structure and requirements on Government contracts provide less flexibility in program implementation. An example is: commercial contracts can take advantage of the latest technological developments, Government contracts often require additional testing and justification.

* Prices to the Government are depressed below commercial prices, due to bids on large quantities on annual basis.

* Statutory limits are placed on profit in Government business.

* The only prime contract ever issued by Washington required full disclosure of all financial aspects of project, thus profit was set as a percentage of sales price by Government regulation.

* Margins on commercial products are higher. Products are developed privately and priced based upon market conditions.

* Lower percent profit on sales but generally higher on return on investment.

* Government defense business usually has hidden amounts of administrative costs which are not reflected in the pricing, therefore less profit on defense business.

* Companies must have state-of-the-art equipment to do Government work and low paid labor base. Even with the above conditions it is hard to get Government work.

* Couldn't compete at the same level - Navy or Government work highly competitive - Pricing is major determining factor in making a sale -- Many jobs taken at cost or even less -- No profit.

* Defense contractors are tightly controlled. Being "first or best" in a defense market does not necessarily increase profits.

* Frequently it does not when you factor in the G&A the Government does not accept (interest, Government salespeople, etc...) otherwise it's about the same.

* Limitation on profit also unallowable overhead expense.

* The Government's profit policies do not adequately reqard innovation since price is a function of cost.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investment? (Please explain your response)

* No. Competition is sufficient

* Yes. Small aerospace job shops are vital to the national defense of our country.

* Yes. Should yield growth opportunities and financial aid in achieving that growth.

* Yes. Geneally speaking, production costs often remain high due to "short term" motivation to maximize return on assets and net profitability at the expense of updating plant facility and equipment.

* No. Prime contractors are in no way of the problems or future needs of a small company such as ours.

* Yes. I guess it depends on the incentive. It must go beyond the concept of capital cost of money which is given to us on one hand and taken back with the other.

* No. Don't see how it would work at this point. We've bought new equipment on our own, as we've seen the need. What kind of incentives could they provide?

* Yes. If a defense contractor is incentivized in their prime contract they should also flowdown the provision in their subcontracts.

* No. The existing facilities can and do accomodate volumes of product many times the volume required by defense contractors.

* Yes. If the contracts can justify the capital investment.

* Yes. If programs were flexible, since technologies, program requirements and companies create widely varying needs.

* Yes. The dichotomy is simply if we invest in capital improvements will we be in a better position to capture the competitive procurement for the next fiscal year or will we obligate ourselves and due to a declining commercial market, find our competition dropping the price to unacceptably low level to capture the business. Multi-year procurements seem to be an easy and workable solution to provide stability.

* Yes. Only where the program is large enough to offer significant inducements for such investment.

* Yes. It might reduce the cost of purchasing from us.

* No. I would rather see the Government look for more in a company than price along, e.g., quality control, standard, on time delivery, etc.... Let the manager of the company make capital investment decisions as business increases.

* Yes. Only if they could guarantee orders if we indeed made a capital investment.

* No. Unless some very specialized investments are required for a particular product or contract.

* Yes. In certain instances with adequate advanced study and inputs from the subcontractor. However, blanket imposition of incentive programs could tend to increase subcontractor burden.

* No. The decision to make capital investments is based on many variables. Prime contractors cannot effectively direct the capital investment needs of a supplier. The procurement practices of the Government tend to discourage investment because of short term (yearly) procurement cycles that Government contracts follow. In order to justify major capital investments, long term commitments are needed to provide an opportunity for a return on the investment.

12. In your opinion, is there any interest on the prime contractors' part concerning your continued viability as a defense subcontractor?

* As much as I like to get defense contracts I find it very difficult to cut through the red tape.

* Limited number of potential suppliers.

* Generally no. However, in specific instances the prime or Navy is interested in our special capabilities. Our facilities at present have no equal in the U.S.

17. If the answer to question 16 was negative please explain. (16. Does Government defense business provide the same profitability, using your measure of profitability, as does your commercial business?)

* The competitive nature of the subcontract letting procedure keep this from happening. We (subcontractors) are all bidding against ourselves.

* Usually labor (engineering) intensive. Quantities small. Combination leads to poor dollar return based on effort required.

* Defense business and particularly Navy business has at best been marginally profitable. We are generally involved as a subcontractor at the first or second tier level and work on a FFP basis where the customer may in fact be working with a CPFF or similiar contract. If our estimates are wrong or problems develop increasing our internal costs, we are pretty much stuck without any way to recover the costs. We are a firm that does a relatively small amount of Government work and do not maintain staff dedicated to administering such contracts.

18. Do you see a need for prime defense contractors to incentivize your firm to make capital investments?

* We need the positive pressure they can exert - It's a forcing function which would be beneficial to all parties. We seldom take the time or have the necessary human resources to look at ourselves.

APPENDIX F

SURVEY NUMERICAL COMPILATION

TOTAL POPULATION

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY
1. FIRM SIZE IN TERMS OF NUMBER OF EMPLOYEES		
A. 1 - 100	26	38.81%
B. 101 - 1,000	27	40.30%
C. 1,001 - 5,000	12	17.91%
D. 5,001 - 10,000	2	2.99%
E. greater than 10,000	0	.00%
TOTAL	67	100.00%
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT		
A. less than 10%	8	11.94%
B. 10 - 24%	7	10.45%
C. 25 - 49%	12	17.91%
D. 50 - 74%	10	14.93%
E. greater than 75%	30	44.78%
TOTAL	67	100.00%
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR		
A. less than 10%	9	13.43%
B. 10 - 24%	8	11.94%
C. 25 - 49%	12	17.91%
D. 50 - 74%	12	17.91%
E. greater than 75%	26	38.81%
TOTAL	67	100.00%
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR		
A. less than $100,000	8	11.94%
B. $100,000 - $500,000	4	5.97%
C. $500,000 - $2,000,000	14	20.90%
D. $2,000,000 - $5,000,000	10	14.93%
E. greater than $5,000,000	31	46.27%
TOTAL	67	100.00%

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A.	CAPITAL INTENSIVE	14	20.90%
B.	LABOR INTENSIVE	22	32.84%
C.	BALANCE BETWEEN CAPITAL AND LABOR	31	46.27%
	TOTAL	67	100.00%

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A.	YES	23	34.33%
B.	NO	44	65.67%
	TOTAL	67	100.00%

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL EQUIPMENT?

A.	YES	16	23.88%
B.	NO	51	76.12%
	TOTAL	67	100.00%

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A.	NOT EFFECTIVE	0	.00%
B.	SOMEWHAT EFFECTIVE	11	68.75%
C.	GENERALLY EFFECTIVE	4	25.00%
D.	VERY EFFECTIVE	1	6.25%
	TOTAL	16	100.00%

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR

A.	YES	43	64.18%
B.	NO	24	35.82%
	TOTAL	67	100.00%

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A.	RETURN ON INVESTMENT	47	50.54%
B.	RETURN ON EQUITY	3	3.23%
C.	PAYBACK	4	4.30%
D.	OTHER	39	41.94%
	TOTAL	93	100.00%

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENHANCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A.	YES	19	28.36%
B.	NO	48	71.64%
	TOTAL	67	100.00%

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A.	RETURN ON INVESTMENT	4	4.30%
B.	RETURN ON ASSETS	22	23.66%
C.	PERCENT OF SALES	52	55.91%
D.	RETURN ON EQUITY	11	11.83%
E.	OTHER	4	4.30%
	TOTAL	93	100.00%

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOUR DEFINITION OF PROFITABILITY, AS YOUR COMMERCIAL BUSINESS?

A.	YES	31	46.27%
B.	NO	36	53.73%
	TOTAL	67	100.00%

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A.	YES	37	55.22%
B.	NO	30	44.78%
	TOTAL	67	100.00%

FIRMS WITH GREATER THAN 75 PERCENT DOD SUBCONTRACTS

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	DIFFERENCE COMPARED TO TOTAL POPULATION
1. FIRM SIZE IN TERMS OF NUMBER OF EMPLOYEES			
A. 1 - 100	8	30.77%	(8.04%)
B. 101 - 1,000	14	53.85%	13.55%
C. 1,001 - 5,000	4	15.38%	(2.53%)
D. 5,001 - 10,000	0	.00%	(2.99%)
E. greater than 10,000	0	.00%	.00%
TOTAL	26	100.00%	
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT			
A. less than 10%	1	3.85%	(8.09%)
B. 10 - 24%	4	15.38%	4.94%
C. 25 - 49%	7	26.92%	9.01%
D. 50 - 74%	0	.00%	(14.93%)
E. greater than 75%	14	53.85%	9.07%
TOTAL	26	100.00%	
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR			
A. less than 10%	0	.00%	(13.43%)
B. 10 - 24%	0	.00%	(11.94%)
C. 25 - 49%	0	.00%	(17.91%)
D. 50 - 74%	0	.00%	(17.91%)
E. greater than 75%	26	100.00%	61.19%
TOTAL	26	100.00%	
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR			
A. less than $100,000	0	.00%	(11.94%)
B. $100,000 - $500,000	0	.00%	(5.97%)
C. $500,000 - $2,000,000	7	26.92%	6.03%
D. $2,000,000 - $5,000,000	5	19.23%	4.31%
E. greater than $5,000,000	14	53.85%	7.58%
TOTAL	26	100.00%	

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A. CAPITAL INTENSIVE	6	23.08%	2.18%
B. LABOR INTENSIVE	7	26.92%	(5.91%)
C. BALANCE BETWEEN CAPITAL AND LABOR	13	50.00%	3.73%
TOTAL	26	100.00%	

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A. YES	10	38.46%	4.13%
B. NO	16	61.54%	(4.13%)
TOTAL	26	100.00%	

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL EQUIPMENT?

A. YES	11	42.31%	18.43%
B. NO	15	57.69%	(18.43%)
TOTAL	26	100.00%	

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A. NOT EFFECTIVE	0	.00%	.00%
B. SOMEWHAT EFFECTIVE	7	63.64%	(5.11%)
C. GENERALLY EFFECTIVE	3	27.27%	2.27%
D. VERY EFFECTIVE	1	9.09%	2.84%
TOTAL	11	100.00%	

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR

A. YES	20	76.92%	12.74%
B. NO	6	23.08%	(12.74%)
TOTAL	26	100.00%	

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A. RETURN ON INVESTMENT	18	50.00%	(.54%)
B. RETURN ON EQUITY	1	2.78%	(.45%)
C. PAYBACK	3	8.33%	4.03%
D. OTHER	14	38.89%	(3.05%)
TOTAL	36	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENHANCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A. YES	10	38.46%	10.10%
B. NO	16	61.54%	(10.10%)
TOTAL	26	100.00%	

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A. RETURN ON INVESTMENT	2	5.56%	1.25%
B. RETURN ON ASSETS	11	30.56%	6.90%
C. PERCENT OF SALES	19	52.78%	(3.14%)
D. RETURN ON EQUITY	2	5.56%	(6.27%)
E. OTHER	2	5.56%	1.25%
TOTAL	36	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOUR DEFINITION OF PROTIFABILITY, AS YOUR COMMERCIAL BUSINESS?

A. YES	13	50.00%	3.73%
B. NO	13	50.00%	(3.73%
TOTAL	26	100.00%	

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A. YES	13	50.00%	(5.22%)
B. NO	13	50.00%	5.22%
TOTAL	26	100.00%	

FIRMS WITH LESS THAN 75 PERCENT BUT GREATER THAN 10 PERCENT DOD SUBCONTRACTS

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	DIFFERENCE COMPARED TO TOTAL POPULATION
1. FIRM SIZE IN TERMS OF NUMBER OF EMPLOYEES			
A. 1 - 100	11	34.38%	(4.43%)
B. 101 - 1,000	11	34.38%	(5.92%)
C. 1,001 - 5,000	8	25.00%	7.09%
D. 5,001 - 10,000	2	6.25%	3.26%
E. greater than 10,000	0	.00%	.00%
TOTAL	32	100.00%	
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT			
A. less than 10%	2	6.25%	(5.69%)
B. 10 - 24%	0	.00%	(10.45%)
C. 25 - 49%	4	12.50%	(5.41%)
D. 50 - 74%	10	31.25%	16.32%
E. greater than 75%	16	50.00%	5.22%
TOTAL	32	100.00	
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR			
A. less than 10%	0	.00%	(13.43%)
B. 10 - 24%	8	25.00%	13.06%
C. 25 - 49%	12	37.50%	19.59%
D. 50 - 74%	12	37.50%	19.59%
E. greater than 75%	0	.00%	(38.81%)
TOTAL	32	100.00%	
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR			
A. less than $100,000	2	6.25%	(5.69%)
B. $100,000 - $500,000	3	9.38%	3.40%
C. $500,000 - $2,000,000	6	18.75%	(2.15%)
D. $2,000,000 - $5,000,000	4	12.50%	(2.43%)
E. greater than $5,000,000	17	53.13%	6.86%
TOTAL	32	100.00%	

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A.	CAPITAL INTENSIVE	5	15.63%	(5.27%)
B.	LABOR INTENSIVE	15	46.88%	14.04%
C.	BALANCE BETWEEN CAPITAL AND LABOR	12	37.50%	(8.77%)
	TOTAL	32	100.00%	

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A.	YES	12	37.50%	3.17%
B.	NO	20	62.50%	(3.17%)
	TOTAL	32	100.00%	

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL EQUIPMENT?

A.	YES	5	15.15%	(8.73%)
B.	NO	28	84.85%	8.73%
	TOTAL	33	100.00%	

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A.	NOT EFFECTIVE	0	.00%	.00%
B.	SOMEWHAT EFFECTIVE	4	80.00%	11.25%
C.	GENERALLY EFFECTIVE	1	20.00%	(5.00%)
D.	VERY EFFECTIVE	0	.00%	(6.25%)
	TOTAL	5	100.00%	

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR

A.	YES	22	68.75%	4.57%
B.	NO	10	31.25%	(4.57%)
	TOTAL	32	100.00%	

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A.	RETURN ON INVESTMENT	23	52.27%	1.74%
B.	RETURN ON EQUITY	1	2.27%	(.95%)
C.	PAYBACK	1	2.27%	(2.03%)
D.	OTHER	19	43.18%	1.25%
	TOTAL	44	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENHANCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A.	YES	9	28.13%	(.23%)
B.	NO	23	71.88%	.23%
	TOTAL	32	100.00%	

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A.	RETURN ON INVESTMENT	2	4.35%	.05%
B.	RETURN ON ASSETS	10	21.74%	(1.92%)
C.	PERCENT OF SALES	24	52.17%	(3.74%)
D.	RETURN ON EQUITY	8	17.39%	5.56%
E.	OTHER	2	4.35%	.05%
	TOTAL	46	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOUR DEFINITION OF PROFITABILITY, AS YOUR COMMERCIAL BUSINESS?

A.	YES	14	43.75%	(2.52%)
B.	NO	18	56.25%	2.52%
	TOTAL	32	100.00%	

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A.	YES	22	68.75%	13.53%
B.	NO	10	31.25%	(13.53%)
	TOTAL	32	100.00%	

FIRMS WITH LESS THAN 10 PERCENT DOD SUBCONTRACTS

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	COMPARED TO TOTAL POPULATION
1. FIRM SIZE IN TERMS OF NUMBER OF EMPLOYEES			
A. 1 - 100	7	77.78%	38.97%
B. 101 - 1,000	2	22.22%	(18.08%)
C. 1,001 - 5,000	0	.00%	(17.91%)
D. 5,001 - 10,000	0	.00%	(2.99%)
E. greater than 10,000	0	.00%	.00%
TOTAL	9	100.00%	
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT			
A. less than 10%	5	55.56%	43.62%
B. 10 - 24%	3	33.33%	22.89%
C. 25 - 49%	1	11.11%	(6.80%)
D. 50 - 74%	0	.00%	(14.93%)
E. greater than 75%	0	.00%	(44.78%)
TOTAL	9	100.00%	
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR			
A. less than 10%	9	100.00%	86.57%
B. 10 - 24%	0	.00%	(11.94%)
C. 25 - 49%	0	.00%	(17.91%)
D. 50 - 74%	0	.00%	(17.91%)
E. greater than 75%	0	.00%	(38.81%)
TOTAL	9	100.00%	
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR			
A. less than $100,000	6	66.67%	54.73%
B. $100,000 - $500,000	1	11.11%	5.14%
C. $500,000 - $2,000,000	1	11.11%	(9.78%)
D. $2,000,000 - $5,000,000	1	11.11%	(3.81%)
E. greater than $5,000,000	0	.00%	(46.27%)
TOTAL	9	100.00%	

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A. CAPITAL INTENSIVE	3	33.33%	12.44%
B. LABOR INTENSIVE	0	.00%	(32.84%)
C. BALANCE BETWEEN CAPITAL AND LABOR	6	66.67%	20.40%
TOTAL	9	100.00%	

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A. YES	1	11.11%	(23.22%)
B. NO	8	88.89%	23.22%
TOTAL	9	100.00%	

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL EQUIPMENT?

A. YES	0	.00%	(23.88%)
B. NO	9	100.00%	23.88%
TOTAL	9	100.00%	

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A. NOT EFFECTIVE	0	0	0
B. SOMEWHAT EFFECTIVE	0	0	0
C. GENERALLY EFFECTIVE	0	0	0
D. VERY EFFECTIVE	0	0	0
TOTAL	0	0	0

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR?

A. YES	1	11.11%	(53.07%)
B. NO	8	88.89%	53.07%
TOTAL	9	100.00%	

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A. RETURN ON INVESTMENT	6	46.15%	(4.38%)
B. RETURN ON EQUITY	1	7.69%	4.47%
C. PAYBACK	0	.00%	(4.30%)
D. OTHER	6	46.15%	4.22%
TOTAL	13	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENHANCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A.	YES	0	.00%	(28.36%)
B.	NO	9	100.00%	28.36%
	TOTAL	9	100.00%	

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A.	RETURN ON INVESTMENT	0	.00%	(4.30%)
B.	RETURN ON ASSETS	1	9.09%	(14.57%)
C.	PERCENT OF SALES	9	81.82%	25.90%
D.	RETURN ON EQUITY	1	9.09%	(2.74%
E.	OTHER	0	.00%	(4.30%
	TOTAL	11	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOUR DEFINITION OF PROFITABILITY, AS YOUR COMMERCIAL BUSINESS?

A.	YES	4	44.44%	(1.82%)
B.	NO	5	55.56%	1.82%
	TOTAL	9	100.00%	

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A.	YES	2	22.22%	(33.00%)
B.	NO	7	77.78%	33.00%
	TOTAL	9	100.00%	

FIRMS WITH GREATER THAN 75 PERCENT DOD BUSINESS

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	DIFFERENCE COMPARED TO TOTAL POPULATION
1. FIRM SIZE IN TERMS ON NUMBER OF EMPLOYEES			
A. 1 - 100	9	30.00%	(8.81%)
B. 101 - 1,000	14	46.67%	6.37%
C. 1,001 - 5,000	6	20.00%	2.09%
D. 5,001 - 10,000	1	3.33%	.35%
E. greater than 10,000	0	.00%	.00%
TOTAL	30	100.00%	
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT			
A. less than 10%	0	.00%	(11.94%)
B. 10 - 24%	0	.00%	(10.45%)
C. 25 - 49%	0	.00%	(17.91%)
D. 50 - 74%	0	.00%	(14.93%)
E. greater than 75%	30	100.00%	55.22%
TOTAL	30	100.00%	
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR			
A. less than 10%	0	.00%	(13.43%)
B. 10 - 24%	4	13.33%	1.39%
C. 25 - 49%	7	23.33%	5.42%
D. 50 - 74%	5	16.67%	(1.24%)
E. greater than 75%	14	46.67%	7.86%
TOTAL	30	100.00%	
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR			
A. less than $100,000	0	.00%	(11.94%)
B. $100,000 - $500,000	2	6.67%	.70%
C. $500,000 - $2,000,000	3	10.00%	(10.90%)
D. $2,000,000 - $5,000,000	4	13.33%	(1.59%)
E. greater than $5,000,000	21	70.00%	23.73%
TOTAL	30	100.00%	

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A. CAPITAL INTENSIVE	3	10.00%	(10.90%)
B. LABOR INTENSIVE	13	43.33%	10.50%
C. BALANCE BETWEEN CAPITAL AND LABOR	14	46.67%	.40%
TOTAL	30	100.00%	

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A. YES	14	46.67%	12.34%
B. NO	16	53.33%	(12.34%)
TOTAL	30	100.00%	

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL EQUIPMENT?

A. YES	11	36.67%	12.79%
B. NO	19	63.33%	(12.79%)
TOTAL	30	100.00%	

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A. NOT EFFECTIVE	0	.00%	.00%
B. SOMEWHAT EFFECTIVE	8	72.73%	3.98%
C. GENERALLY EFFECTIVE	2	18.18%	(6.82%)
D. VERY EFFECTIVE	1	9.09%	2.84%
TOTAL	11	100.00%	

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR

A. YES	22	73.33%	9.15%
B. NO	8	26.67%	(9.15%)
TOTAL	30	100.00%	

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A. RETURN ON INVESTMENT	20	46.51%	(4.03%)
B. RETURN ON EQUITY	2	4.65%	1.43%
C. PAYBACK	1	2.33%	(1.98%)
D. OTHER	20	46.51%	4.58%
TOTAL	43	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENHANCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A.	YES	12	40.00%	11.64%
B.	NO	18	60.00%	(11.64%
	TOTAL	30	100.00%	

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A.	RETURN ON INVESTMENT	1	2.33%	(1.98%)
B.	RETURN ON ASSETS	11	25.58%	1.93%
C.	PERCENT OF SALES	24	55.81%	(.10%)
D.	RETURN ON EQUITY	5	11.63%	(.20%)
E.	OTHER	2	4.65%	.35%
	TOTAL	43	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOUR DEFINITION OF PROFITABILITY, AS YOUR COMMERCIAL BUSINESS?

A.	YES	16	53.33%	7.06%
B.	NO	14	46.67%	(7.06%)
	TOTAL	30	100.00%	

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A.	YES	21	70.00%	14.78%
B.	NO	9	30.00%	(14.78%)
	TOTAL	30	100.00%	

FIRMS WITH LESS THAN 75 PERCENT BUT GREATER THAN 10 PERCENT DOD BUSINESS

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	DIFFERENCE COMPARED TO TOTAL POPULATION
1. FIRM SIZE IN TERMS OF NUMBER OF EMPLOYEES			
A. 1 - 100	12	41.38%	2.57%
B. 101 - 1,000	11	37.93%	(2.37%)
C. 1,001 - 5,000	6	20.69%	2.78%
D. 5,001 - 10,000	0	.00%	(2.99%)
E. greater than 10,000	0	.00%	.00%
TOTAL	29	100.00%	
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT			
A. less than 10%	0	.00%	(11.94%)
B. 10 - 24%	7	24.14%	13.69%
C. 25 - 49%	12	41.38%	23.47%
D. 50 - 74%	10	34.48%	19.56%
D. greater than 75%	0	.00%	(44.78%)
TOTAL	29	100.00%	
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR			
A. less than 10%	4	13.79%	.36%
B. 10 - 24%	4	13.79%	1.85%
C. 25 - 49%	5	17.24%	(.67%)
D. 50 - 74%	5	17.24%	(.67%)
E. greater than 75%	11	37.93%	(.87%)
TOTAL	29	100.00%	
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR			
A. less than $100,000	4	13.79%	1.85%
B. $100,000 - $500,000	1	3.45%	(2.52%)
C. $500,000 - $2,000,000	9	31.03%	10.14%
D. $2,000,000 - $5,000,000	5	17.24%	2.32%
E. greater than $5,000,000	10	34.48%	(11.79%)
TOTAL	29	100.00%	

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A. CAPITAL INTENSIVE	8	27.59%	6.69%
B. LABOR INTENSIVE	9	31.03%	(1.80%)
C. BALANCE BETWEEN CAPITAL AND LABOR	12	41.38%	(4.89%)
TOTAL	29	100.00%	

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A. YES	8	27.59%	(6.74%)
B. NO	21	72.41%	6.74%
TOTAL	29	100.00%	

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL INVESTMENT?

A. YES	5	17.24%	(6.64%)
B. NO	24	82.76%	6.64%
TOTAL	29	100.00%	

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A. NOT EFFECTIVE	0	.00%	.00%
B. SOMEWHAT EFFECTIVE	3	60.00%	(8.75%)
C. GENERALLY EFFECTIVE	2	40.00%	15.00%
D. VERY EFFECTIVE	0	.00%	(6.25%)
TOTAL	5	100.00%	

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR?

A. YES	18	62.07%	(2.11%)
B. NO	11	37.93%	2.11%
TOTAL	29	100.00%	

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A. RETURN ON INVESTMENT	22	55.00%	4.46%
B. RETURN ON EQUITY	0	.00%	(3.23%)
C. PAYBACK	3	7.50%	3.20%
D. OTHER	15	37.50%	(4.44%)
TOTAL	40	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENAHNCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A.	YES	7	24.14%	(4.22%)
B.	NO	22	75.86%	4.22%
	TOTAL	29	100.00%	

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A.	RETURN ON INVESTMENT	2	5.00%	.70%
B.	RETURN ON ASSETS	10	25.00%	1.34%
C.	PERCENT OF SALES	21	52.50%	(3.41%)
D.	RETURN ON EQUITY	5	12.50%	.67%
E.	OTHER	2	5.00%	.70%
	TOTAL	40	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOUR DEFINITION OF PROFITABILITY, AS YOUR COMMERCIAL BUSINESS?

A.	YES	10	34.48%	(11.79%)
B.	NO	19	65.52%	11.79%
	TOTAL	29	100.00%	

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A.	YES	13	44.83%	(10.40%)
B.	NO	16	55.17%	10.40%
	TOTAL	29	100.00%	

FIRMS WITH LESS THAN 10 PERCENT DOD BUSINESS

QUESTION	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	DIFFERENCE COMPARED TO TOTAL POPULATION
1. FIRM SIZE IN TERMS OF NUMBER OF EMPLOYEES			
A. 1 - 100	5	62.50%	23.69%
B. 101 - 1,000	2	25.00%	(15.30%)
C. 1,000 - 5,000	0	.00%	(17.91%)
D. 5,001 - 10,000	1	12.50%	9.51%
E. greater than 10,000	0	.00%	.00%
TOTAL	8	100.00%	
2. PERCENT OF TOTAL BUSINESS (SALES) WITH GOVERNMENT			
A. less than 10%	8	100.00%	88.06%
B. 10 - 24%	0	.00%	(10.45%)
C. 25 - 49%	0	.00%	(17.91%)
D. 50 - 74%	0	.00%	(14.93%)
E. greater than 75%	0	.00%	(44.78%)
TOTAL	8	100.00%	
3. PERCENT OF GOVERNMENT BUSINESS IN THE ROLE OF A SUBCONTRACTOR			
A. less than 10%	5	62.50%	49.07%
B. 10 - 24%	0	.00%	(11.94%)
C. 25 - 49%	0	.00%	(17.91%)
D. 50 - 74%	2	25.00%	7.09%
E. greater than 75%	1	12.50%	(26.31%)
TOTAL	8	100.00%	
4. ANNUAL DOLLAR SAVES VOLUME AS A GOVERNMENT SUBCONTRACTOR			
A. less than $100,000	4	50.00%	38.06%
B. $100,000 - $500,000	1	12.50%	6.53%
C. $500,000 - $2,000,000	2	25.00%	4.10%
D. $2,000,000 - $5,000,000	1	12.50%	(2.43%)
E. greater than $5,000,000	0	.00%	(46.27%)
TOTAL	8	100.00%	

5. THE BASIC MANUFACTURING PROCESS OF YOUR FIRM CAN BEST BE DESCRIBED AS:

A. CAPITAL INTENSIVE	3	37.50%	16.60%
B. LABOR INTENSIVE	0	.00%	(32.84%)
C. BALANCE BETWEEN CAPITAL AND LABOR	5	62.50%	16.23%
TOTAL	8	100.00%	

8. IS YOUR COMPANY AWARE OF THE DOD PROFIT POLICY AND SPECIFICALLY THE CAPITAL INVESTMENT PORTION?

A. YES	1	12.50%	(21.83%)
B. NO	7	87.50%	21.83%
TOTAL	8	100.00%	

9. IS THERE ANY EFFORT ON THE PRIMES' PART TO INCENTIVIZE YOU TO INVEST IN PRODUCTIVITY ENHANCING CAPITAL EQUIPMENT?

A. YES	0	.00%	(23.88%)
B. NO	8	100.00%	23.88%
TOTAL	8	100.00%	

10. IF THE QUESTION 9 WAS POSITIVE HOW EFFECTIVE ARE THE PRIMES' EFFORTS?

A. NOT EFFECTIVE	0	.00%	.00%
B. SOMEWHAT EFFECTIVE	0	.00%	.00%
C. GENERALLY EFFECTIVE	0	.00%	.00%
D. VERY EFFECTIVE	0	.00%	.00%
TOTAL	0	.00%	

12. IN YOUR OPINION IS THERE ANY INTEREST ON THE PRIMES' PART CONCERNING YOUR CONTINUED VIABILITY AS A DEFENSE SUBCONTRACTOR?

A. YES	3	37.50%	(26.68%)
B. NO	5	62.50%	26.68%
TOTAL	8	100.00%	

13. ON WHAT BASIS DO YOU MAKE CAPITAL INVESTMENTS?

A. RETURN ON INVESTMENT	5	50.00%	(.54%)
B. RETURN ON EQUITY	1	10.00%	6.77%
C. PAYBACK	0	.00%	(4.30%)
D. OTHER	4	40.00%	(1.94%)
TOTAL	10	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

14. IS YOUR FIRM FAMILIAR WITH THE CONCEPT AND IMPLEMENTATION OF PRODUCTIVITY ENHANCING CAPITAL INVESTMENT PROGRAMS SUCH AS IMIP, MANTECH OR TECHMOD?

A.	YES	0	.00%	(28.36%)
B.	NO	8	100.00%	28.36%
	TOTAL	8	100.00%	

15. ON WHAT BASIS DOES YOUR FIRM MEASURE PROFITABILITY?

A.	RETURN ON INVESTMENT	1	10.00%	5.70%
B.	RETURN ON ASSETS	1	10.00%	(13.66%)
C.	PERCENT OF SALES	7	70.00%	14.09%
D.	RETURN ON EQUITY	1	10.00%	(1.83%)
E.	OTHER	0	.00%	(4.30%)
	TOTAL	10	100.00%	

*ADDS TO MORE THAN 65 DUE TO MORE THAN ONE RESPONSE

16. DOES GOVERNMENT BUSINESS PROVIDE THE SAME PROFITABILITY, USING YOU DEFINITION OF PROFITABILITY, AS YOUR COMMERCIAL BUSINESS?

A.	YES	5	62.50%	16.23%
B.	NO	3	37.50%	(16.23%)
	TOTAL	8	100.00%	

18. DO YOU SEE A NEED FOR PRIME CONTRACTORS TO PROVIDE CAPITAL INVESTMENT INCENTIVES TO YOUR FIRM?

A.	YES	3	37.50%	(17.72%)
B.	NO	5	62.50%	17.72%
	TOTAL	8	100.00%	

APPENDIX G

SIC CODES AND DEFINITIONS

SIC CODE	# OF FIRMS	DEFINITIONS
2891	1	Adhesives and Sealants
2892	1	Explosives
3452	1	Bolts, Nuts, Screws, Rivets and Washers
3463	1	Non Ferrous Forgings
3483	1	Ammunition except for Small Arms
3561	1	Pump and Pumping Equipment
3564	1	Ball and Roller Bearings
3613	1	Switch Gear and Switchboard Apparatus
3622	1	Welding A-paratus Electrical
3643	1	Current Carrying Wiring Devices
3660	1	Communication Equipment
3662	6	Radio and Television Transmitting, Signaling, and Detection Equipment
3679	4	Electrical Components not elsewhere classified
3700	1	Transportation Equipment
3721	1	Aircraft
3728	1	Aircraft Parts and Auxillary Equipment not elsewhere classified

3764	1	Guided Missile and Space Vehicle Propulsion Units and Propulsion Unit Parts
3829	1	Measuring and Controlling Devices not elsewhere classified
7391	1	Research and Development Laboratories

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